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- (54) Safening imidazolinone herbicides.
- The disclosure herein relates to the use of certain amides of dichloroacetic acid and other compounds as safener/antidotal compounds to reduce the phytotoxicity to crop plants, especially corn, of imidazolinone-type herbicides alone or in admixture with other co-herbicidal compounds, e.g., α-haloacetamides.

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#### SAFENING IMIDAZOLINONE HERBICIDES

#### FIELD OF THE INVENTION

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The field of the invention contemplated herein pertains to the safening of herbicidal compounds with antidotal or safener compounds. Particular herbicides involved are imidazolinone compounds with or without coherbicidal compounds, e.g.,  $\alpha$ -haloacetanilides.

#### BACKGROUND OF THE INVENTION

Many herbicides injure crop plants at herbicide application rates necessary to control weed growth. Accordingly, many herbicides cannot be used for controlling weeds in the presence of certain crops. Uncontrolled weed growth, however, results in lower crop yield and reduced crop quality inasmuch as weeds compete with crops for light, water and soil nutrients. Reduction of herbicidal injury to crops without an unacceptable corresponding reduction of herbicidal action on the weeds can be accomplished by use of crop protectants known as herbicide "antagonists", "antidotes" or "safeners".

Weed control for crops, especially com crops, is one of the oldest and most highly developed areas in weed science. For a herbicide product to be accepted commercially for com crops, such herbicide product must provide a relatively high level of control of both grassy and broadleaf weeds in com, in addition to meeting several other criteria. For example, the herbicide should possess relatively high unit activity so that lower rates of herbicide application are feasible. Lower application rates are desirable in order to minimize exposure of the environment to the herbicide. At the same time, such herbicide must be selective in herbicidal effect so as not to injure the crops. Herbicidal selectivity can be enhanced by use of an appropriate antidote in combination with the herbicide. But identification of an antidote which safens a herbicide in crops is a highly complicated task. Whether a compound or class of compounds provides efficacious antidote or safening activity is not a theoretical determination but must be done empirically. Safening activity is determined empirically by observing the complex interaction of several biological and chemical factors, namely: the type of herbicide compound; the type of weed to be controlled; the type of crop to be protected from weed competition and herbicidal injury; and the antidote compound itself. Moreover, the herbicide and antidote must each possess chemical and physical properties enabling preparation of a stable formulation which is environmentally safe and easy to apply to the field.

Among the various classes of compounds found to be suitable for various herbicidal purposes are the  $\alpha$ -haloacetanilides and imidazolinones. The former herbicides, e.g., alachlor, acetochlor, metolachlor, etc., are excellent preemergence or early post emergence herbicides for controlling annual grasses and many broadleaved weeds in corn, peanuts, soybeans and other crops, while some of the latter herbicides, exemplified by imazaquin, imazethapyr, imazapyr AC-222293, and AC-263222, may be used as a foliar - or soil-applied herbicide suitable for the control of many annual and perennial broadleaved species in asparagus, cereals, grain, corn, sorghum, sugarcane and other crops and woody brush and vine control in pasture, rangeland and cropland. Other imidazolinones can be used in preplant or preemergence applications.

It is a common agronomic practice to use various antidotal compounds to reduce the phytotoxicity of some herbicides to various crops. For example, fluorazole (active ingredient in SCREEN® safener) is used as a seed dressing to protect sorghum seed from alachlor (active ingredient in LASSO® herbicide). Similarly, cyometrinil (active ingredient in CONCEP® safener) is a corn seed safener for use with metolachlor and oxabetrinil (active ingredient in CONCEP II safener) is used to safen sorghum seed from injury by metolachlor. The compound N,N-diallyl dichloroacetamide (common name R-25788) is used to safen corn from injury by the thiocarbamate 5-ethyl-N,N-dipropylthiocarbamate (active ingredient in ERADICANE® herbicide) and acetochlor (active ingredient in HARDNESS® herbicide).

It is not known to our knowledge to safen imidazolinones when used alone or in combination with other herbicides, especially  $\alpha$ -haloacetanilides, as co-herbicides. Accordingly, it is an object of this invention to provide compositions of those herbicides in combination with antidotes therefor, which compositions are useful to reduce injury to crops, especially corn, due to phytotoxicity of said herbicides.

## **SUMMARY OF THE INVENTION**

The present invention relates to herbicidal compositions comprising imidazolinone h rbicides and antidotal compounds therefor to reduce injury to various crops, particularly com, from the phytotoxic effects of said herbicid when used alone r in combination with other compounds, particularly  $\alpha$ -haloacetanilides, as  $\alpha$ -her-

#### bicides.

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In more particular, in a major aspect, this invention relates to a composition comprising:
(a) a herbicidal compound having the formula

#### wherein

R represents one of the radicals

IA (R<sub>4</sub>)<sub>m</sub>

IB C - R<sub>5</sub>

IC R<sub>6</sub> - C - C - X
R<sub>7</sub> - C -

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wherein in Formulae I and IA, the dashes represent saturation or unsaturation (it being understood that in Formula I when one dashed line represents an unsaturated bond with one N atom, the  $R_3$  group will be attached to the other N atom) and in Formula I

R<sub>1</sub> is H, C<sub>1-4</sub> alkyl or haloalkyl,

 $R_2$  is H,  $C_{1-6}$  alkyl,  $C_{3-6}$  cycloalkyl or cycloalkylmethyl, phenyl, halophenyl, benzyl or  $R_1$  and  $R_2$  combined from a  $C_{3-6}$  cycloalkyl which may be substituted with  $C_{1-3}$  alkyl;

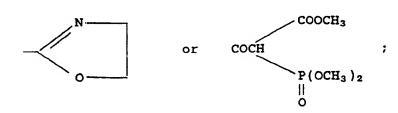
 $R_3$  is H, COD<sub>1</sub> SOD<sub>2</sub> or SO<sub>2</sub>D<sub>3</sub>, wherein D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub> are H, C<sub>1-10</sub> alkyl, halomethyl or phenyl which may be substituted with halogen, NO<sub>2</sub> or C<sub>1-4</sub> alkyl or alkoxy, said R<sub>3</sub> being attached to the ring nitrogen atom of the isomer not having a double bond structure; and

W is oxygen or sulfur;

where in Formula IA

A is  $COOD_4$ ,  $CONHD_5$ ,  $COND_6D_7$ , CHO,  $CH_2OH$ ,  $COCH_3$ ,  $COC_6H_5$ , CN,  $CH_3$ , CH=NOH,  $CH_2COOH$ ,  $CH_2COOH$ ,  $CH_2COOH$ ,  $CH_2COOH$ ,  $CH_2COOH$ ,  $CH_3COOH$ ,  $CH_3COOH$ , CONHOH,  $CHD_9OH$ ,

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 $D_4$  is H, diloweralkylimino,  $C_{1-12}$  alkyl optionally substituted with  $C_{1-3}$  alkoxy, halogen, OH,  $C_{3-6}$  cycloalkyl or cycloalkylmethyl; benzyl, benzyloxy,  $C_{1-4}$  alkyl or alkoxy, nitro or carboxyl; furyl, tetrahydrofuryl, dial-kylphosphonyl, glycidyl,  $COC_{1-4}$  alkoxy, CN, phenyl, benzyl,  $NH(C_{1-4}$  alkyl)3,  $C_{3-12}$  alkenyl or alkynyl, both optionally substituted with  $C_{1-3}$  alkoxy, phenyl, halogen or  $COC_{1-4}$  alkoxy;  $C_{3-6}$  cycloalkyl or cycloal-kylmethyl, both optionally substituted with  $C_{1-3}$  alkyl; or a cation selected from alkali and alkaline earth metals, Mn, Cn, Fe, Zn, Co, Pb, Ag, Ni, ammonium and organic ammonium;

 $D_5$  is H, OH, NH<sub>2</sub>, N(CH<sub>3</sub>)<sub>2</sub>, NHCOCH<sub>3</sub>,  $C_8H_5NH_2$ ,  $C_{3-5}$  alkenyl or alkynyl or  $C_{1-4}$  alkyl optionally substituted with OH or halogen;

 $D_8$ ,  $D_7$  and  $D_8$  are H, OH or  $C_{1-4}$  alkyl;

10 B is N or -CH-;

m is 0-3; and

 $R_4$  is H, halogen,  $C_{1-6}$  alkyl, alkoxy, alkylthio, haloalkyl, or hydroxyalkyl;  $NO_2$ , CN, phenyl or phenoxyl, both optionally substituted with  $C_{1-4}$  alkyl, alkoxy or alkoxyalkyl or halogen;  $SD_9$  or  $OD_{10}$  wherein

 $D_9$  is H, phenyl or phenyl substituted with halogen,  $C_{1-3}$  alkyl or alkoxy,  $NO_2$ ; pyridyl or  $C_{1-3}$  alkyl-substituted pyridyl;  $C_{2-8}$  alkyl, alkoxy or polyalkoxy;  $C_{3-8}$  cycloalkyl or heterocyclyl containing O, S or N atoms both of which may be substituted with  $C_{1-4}$  alkyl, alkoxy or halogen;  $C_{5-8}$  cycloalkenyl, and

 $D_{10}$  is H,  $C_{3-8}$  cycloalkyl or heterocyclyl containing O, S or N atoms both of which may be substituted as in  $D_8$  or  $C_{5-8}$  cycloalkenyl;

when B is N, two R, radicals may be combined to form a radical having one of the following formulae:

, where m is 2 or 3;

IA(2) -(CH<sub>2</sub>)<sub>n</sub>-, where n is 2-4;

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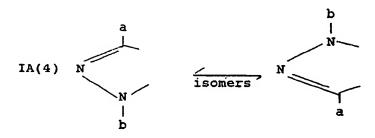
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where in formula IA(3) and IA(4)

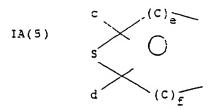
a is H,  $C_{1-4}$  alkyl, alkoxyalkyl or haloalkyl,  $C_{5-8}$  cycloalkyl, cycloalkylmethyl, phenyl, benzyl, acyl, pyridyl, alkyl- or arylsulfonyl and

b is H,  $C_{1-4}$  alkyl, alkoxy, halogen, NO<sub>2</sub>, NH<sub>2</sub>, CN, phenyl or benzyl or a and b radicals substituted with  $C_{1-4}$  alkyl, haloalkyl, alkoxy, halogen, NO<sub>2</sub> or NH<sub>2</sub>;

provided that when  $R_4$  is a radical of the formula IA(3), the ring to which it is attached has only two unsatured bonds;

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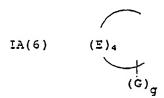
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e and f are 0-2 and e + f = 2;

c and d are halogen,  $C_{1-4}$ alkyl, alkoxy, haloalkyl, hydroxyalkyl, alkylthio, alkylsulphonyl, acyl or alkoxycarbonyl;  $C_{3-8}$  cycloalkyl, cycloalkylmethyl or halocycloalkylmethyl;  $C_{2-8}$  alkenyl, haloalkenyl, alkynyl or haloalkynyl; phenyl, benzyl or pyridyl and when e or f is 0 and the other is 2, c and d can form a ring;



wherein

g is 0-6;

one of the E members is O, S, SO, SO<sub>2</sub>, ND<sub>11</sub>, -CO- or = CH-, the other E members being C atoms, provided that when one E is =C- there is only one double bond in the (E)<sub>4</sub> ring and when the E member is not =C-, there may or may not be one double bond in that ring;

D<sub>11</sub> is H or C<sub>1-3</sub> alkyl and

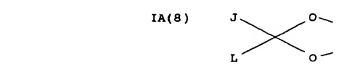
G is the same as an uncombined, discrete  $R_4$  member in formula IA or tetrahydropyranyl, OH, CF<sub>3</sub>, phenyl, benzyl or pyridyl or phenyl-, benzyl- or pyridyl-substitued with  $C_{1-4}$  alkyl, alkoxy, alkylthio, CF<sub>3</sub>, NO<sub>2</sub> or halogen;

wherein

h = 0 or 1;

J and L are H,  $C_{1-8}$  alkyl or cycloalkyl, both of which may be substituted with  $C_{1-3}$  alkyl, alkoxy, hlogen; when B in formula IA is -CH-,

 $R_4$  is H, halogen, NO<sub>2</sub>,  $C_{1-3}$  alkyl, haloaikyl, alkoxy,  $C_{1-6}$  alkoxyalkyl or two  $R_4$  members together form the radical



where J and L are as defin d in Formula IA(7); wher in Formula IB, (-) (+)

 $R_{\delta}$  is  $C_{1\!-\!\delta}$  alkyoxy,  $NH_2$ , -O-NHD<sub>12</sub>D<sub>13</sub>, or OM ;

wherein  $D_{12}$  and  $D_{13}$  are H or  $C_{1\!-\!4}$  alkyl, and M is an alkali metal or alkaline arth metal and wher in Formula IC,

 $R_6$  and  $R_7$  ar H or  $C_{1-4}$  alkyl, and X is OH, OD<sub>14</sub>, N(C<sub>1-3</sub> alkyl)<sub>2</sub>, N(CH<sub>2</sub>CH<sub>2</sub>OCH<sub>3</sub>)<sub>2</sub>, NHD<sub>15</sub> or one of the following radicals:

-N

, -N NH

-N C

wherein

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 $D_{14}$  is  $C_{1-8}$  alkyl or haloalkyl,  $C_{3-12}$  alkenyl or alkynyl,  $C_{2-12}$  alkoxyalkyl or haloalkoxyalkyl, phenoxy, phenyl- $C_{1-8}$  alkyl, phenoxy- $C_{1-8}$ -alkyl, a salt-forming cation from ammonium, organic ammonium, alkali and alkaline earth metals, Mn, Cu, Fe, Zn, Co, Pb, Ag, Al or Ni; and

 $D_{15}$  is H, OH,  $C_{3-6}$  cycloalkyl,  $C_{1-12}$  alkyl, haloalkyl, hydroxyalkyl, cyanoalkyl, carbamoylalkyl,  $C_{3-12}$  alkenyl, haloalkenyl, alkynyl, haloalkynyl,  $C_{6-12}$  aryl or aryl- $C_{1-6}$  alkyl or alkoxy,  $C_{1-3}$  alkoxycarbonyl- $C_{1-6}$  alkyl, furyl, or tetrahydrofuryl;

said compound of Formula I being used alone or in admixture with other known herbicidal compounds as co-herbicides, preferably an acetanilide of the formula

C1CH<sub>2</sub>C - N - R<sub>8</sub>  $[V] \qquad \qquad \begin{bmatrix} 6 & & 2 \\ & & \\ 5 & & 4 \end{bmatrix} (R<sub>9</sub>)<sub>1</sub>$ 

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wherein

 $R_8$  is hydrogen,  $C_{1-8}$  alkyl, haloalkyl, alkoxy or alkoxyalkyl, alkenyl, haloalkenyl, alkynyl or haloalkynyl having up to 6 carbon atoms,  $C_{5-10}$  heterocyclyl or heterocyclylmethyl having O, S and/or N atoms and which may be substituted with halogen,  $C_{1-4}$  alkyl, carbonylalkyl or carbonylalkoxyalkyl, nitro, amino or cyano groups;

 $R_{\theta}$  is hydrogen, halogen, nitro, amino,  $C_{1-\theta}$  alkyl, alkoxy or alkokyalkyl, and i is 0-5 and

(b) an antidotally-effective amount of

ΙI

(i) a compound of the formula

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 $R_{10} - C - N$   $R_{12}$ 

wherein R<sub>10</sub> can be selected from the group consisting of haloalkyl; haloalkenyl; alkyl; alkenyl; cycloalkyl; cycloalkyl; halogen; hydrogen; carboalkoxy; N-alkenylcarbamylalkyl; N-alkenylcarbamyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; alkynoxy; haloalkoxy; thiocyanatoalkyl; alkenylaminoalkyl; alkylcarboalkyl; cyanoalkyl; cyanoalkyl; cyanoalkyl; alkenylaminosulfonoalkyl; alkylthi alkyl; haloalkylcarbonyloxyalkyl; alkoxycarboalkyl; hydroxyalkyl; hydroxyalkyl; hydroxyalkyl; hydroxyalkyl; hydroxyalkyl; alkoxysulfonoalkyl; furyl, thienyl; alkyldithiolenyl; thienalkyl; phenyl and substituted phenyl wherein said substituents can b selected from halog n, alkyl, haloalkyl, alkoxy, carbamyl, nitro, carboxylic acids and thir salts, haloalkylcarbamyl; phenylalkyl; ph nythaloalkyl; phenylalk nyl; substitut d phenylalkenyl wherein said substituents can be select d from halogen, alkyl, alkoxy, halophenoxy, phenylalk xy; ph nytalkylcarboxyalkyl;

ph nylcycloalkyl; haloph nylalkenoxy; halothiophenylalkyl; halophenoxyalkyl; bicycloalkyl; alk nylcarbamylpyridinyl; alkynylcarbamylpyridinyl; dialkenylcarbamylbicycloalkenyl; alkynylcarbamylbicycloalkenyl;

R<sub>11</sub> and R<sub>12</sub> can be the same or different and can be selected from the group consisting of alkenyl; haloalkenyi; hydrogen; alkyi; haloalkyi; alkynyi; cyanoalkyi; hydroxyalkyi; hydroxyhaloalkyi; haloalkyicarboxyalkyl; alkylcarboxyalkyl; alkoxycarboxyalkyl; alkoxycarboxyalkyl; alkoxycarboxyalkyl; alkoxycarboxyalkyl; amino; formyl; haloalkyl-N-alkylamido; haloalkylamido; haloalkylamidoalkyl; haloalkyl-N-alkylamidoalkyl; haloalkylamidoalkenyl; alkylimino; cycloalkyl; alkylcycloalkyl; alkoxyalkyl; alkylsulfonyloxyalkyl; mercaptoalkyl; alkylaminoalkyl; alkoxycarboalkenyl; haloalkylcarbonyl; alkylcarbonyl; alkenylcarbamyloxyalkyl; cycloalkylcarbamyloxyalkyl; alkoxycarbonyl; haloalkoxycarbonyl; halophenylcarbamyloxyalkyl; cycloalkenyl; phenyl; substituted phenyl wherein said substituents can be selected from alkyl, halogen, haloalkyl, alkoxy, haloalkylamido, phthalamido, hydroxy, alkylcarbamyloxy, alkenylcarbamyloxy, alkylamido, haloalkylamido or alkylcarboalkenyl; phenylsulfonyl; substituted phenylalkyl wherein said substituents can be selected from halogen or alkyl; dioxyalkylene, halophenoxyalkylamidoalkyl; alkylthiodiazolyl; piperidyl; piperidylalkyl; dioxolanylalkyl, thiazolyl; alkylthiazolyl; benzothiazolyl; halobenzothiazolyl; furyl; alkyl-substituted furyl; furylalkyl; pyridyl; alkylpyridyl; alkyloxazolyl; tetrahydrofurylalkyl; 3-cyano, thienyl; alkyl-sub-4,5-polyalkylene-thienyl; α-haloalkylacetamidophenylalkyl; stituted thienyl; α-haloaikylacetamidonitrophenylalkyl; α-haloalkylacetamidohalophenylalkyl; cyanoalkenyl;

 $R_{11}$  and  $R_{12}$  when taken together can form a structure consisting of piperidinyl ; alkylpiperidinyl ; pyridyl ; di- or tetrahydropyridinyl ; alkyltetrahydropyridyl ; morpholyl ; alkylmorpholyl ; azabicyclononyl ; diazacycloalkanyl, benzoalkylpyrrolidinyl ; oxazolidinyl ; perhydrooxazolidinyl ; alkyloxazolidyl ; furyloxazolidinyl, thienyloxazolidinyl, pyrimidinyloxazolidinyl, benzooxazolidinyl,  $C_{3-7}$  spirocycloalkyloxazolidinyl, alkylaminoalkenyl ; alkylideneimino ; pyrrolidinyl ; piperidonyl ; perhydroazepinyl ; perhydroazepinyl ; perhydroazepinyl ; perhydroazocinyl ; pyrazolyl ; dihydropyrazolyl ; piperazinyl ; perhydro-1,4-diazepinyl ; quinolinyl, isoquinolinyl ; di-, tetra- and perhydroquinolyl- or -isoquinolyl ; indolyl and di- and perhydroindolyl and said combined  $R_{11}$  and  $R_{12}$  members substituted with those independent  $R_{11}$  and  $R_{12}$  radicals enumerated above ;

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(ii) one of the following compounds

a-f(Cvanomethoxy)imino]benzeneacetonitrile,

 $\alpha$ -[(1,3-Dioxopyran-2-yl-methoxy)-imino]benzeneacetonitrile,

5-Thiazolecarboxylic acid, 2-chloro-4-trifluoromethyl, benzyl ester,

Benzenemethamine, N-[4-(dichloromethylene]-1,3-ditholan-2-ylidene]-a-methyl, hydrochloride,

Diphenylmethoxy acetic acid, methyl ester,

1,8-Naphthalic anhydride,

4,6-Dichloro-2-phenyl-pyrimidine,

2-Chloro-N-[1-(2,4,6-trimethylphenyl)ethenyl]acetamide,

Ethylene alycol acetal of 1.1-dichloroacetone;

provided that when the compound of Formula I is imazaquin, the antidotal compound is other than 1,8-na-phthalic anhydride, oxabetrinil, flurazole or N,N-diallyl dichloroacetamide and when the compound of Formula I is imazethapyr, the antidotal compound is other than 1,8-naphthalic anhydride.

Preferred herbicidal compounds according to Formula I are those wherein  $R_1$  and  $R_2$  are H,  $C_{1-4}$  alkyl or haloalkyl,  $R_3$  is H, W is 0 and R is a radical according to Formula IA wherein the dashed line represents an unsaturated bond, A is COOH or an amide, ester or salt thereof and  $R_4$  is at least one  $C_{1-4}$  alkyl group or two  $R_4$  groups combine to form a benzo radical with the B-containing ring.

Preferred species of herbicidal compounds according to the above formulae include the following

3-Quinolinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl], (common name "imazaquin", active ingredient in SCEPTER® herbicide),

3-Pyridinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl], (common name "imazapyr", active ingredient in ARSENAL® herbicide),

Benzoic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-4 (or 5)-methyl-, (common name "AC-222,293", active Ingredient in ASSERT® herbicide),

3-Pyridinecarboxylic acid, 5-ethyl-2-[4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl], (common name "imazethapur" (also "AC-263499") active ingredient in PURSUIT® herbicide), and

3-Pyridinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yi]-5-methyl-, amm nium salt, (common name "AC-263,222", active ingredient in CADRE® herbicide).

2-(5-Methyl-5-trifluoromethyl-1-H-imidazol-4-on-2-yl)-pyridin-3-carboxylic acid;

2-(5-Methyl-5-trifluoromethyl-1-H-imidazol-4-on-2-yl)5-(m)ethyl isonicotinic acid;

2-[5-(1-Fluoroethyl)-5-(m)ethyl-H-imidazol-4-on-2-yl]isonicotinic acid;

2-(5-(Difluoromethyl-5-(m)ethyl-1-H-imidazol-4-on-2yl]-5-(m)ethyl-isonicotinic acid;

2-(5-(1-Fluoroethyl)-5-(m)ethyl)-imidazol-4-on-2-yllisonicotinic (m) thyl ester;

Preferred herbicidal acetanilide compounds according to Formula IV are thos wherein the  $R_8$  memb r is an alkoxyalkyl group having up to 6 carbon atoms and  $R_9$  is a  $C_{1\,6}$  alkyl or alk xyalkyl radical. The most preferred species are 2-chloro-2'-ethyl-6'-methyl-N-(ethoxymethyl) acetanilide (common name "acetochlor"), 2-chloro-2',6'-diethyl-N-(butoxymethyl) acetanilide, 2-chloro-2'-ethyl-6'-methyl-N-(1-methyl-2-methoxyethyl) acetanilide (common name "metolachlor") and 2-chloro-2',6'-dimethyl-N-(pyrazolylmethyl) acetanilide (common name "metazachlor").

One group of preferred antidotal compounds includes those according to Formula II wherein  $R_{10}$  is  $C_{1-3}$  haloalkyl,  $R_{11}$  and  $R_{12}$  are independently  $C_{2-4}$  alkenyl or haloalkenyl or 2,3-dioxolan-2-yl-methyl and  $R_{11}$  and  $R_{12}$  when combined form a  $C_{5-10}$  saturated or unsaturated heterocyclic ring containing O, S and/or N atoms and which may be substituted with  $C_{1-5}$  alkyl, haloalkyl, alkoxy, or alkoxyalkyl or haloacyl groups. The preferred haloalkyl  $R_{10}$  member in Formula II is dichloromethyl. Preferred species in this group of antidotal compounds are N,N-diallyl-dichloroacetamide and N-(2-propenyl)-N-(1,3-dioxolanylmethyl)dichloroacetamide.

Still more preferred antidotal compounds according to Formula II is a group of substituted 1,3-oxazolidinyl dichloroacetamide having the formula

III 
$$Cl_2CHC - N_3$$

$$R_{14}$$

$$R_{15}$$

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wherein

 $R_{13}$  is hydrogen,  $C_{1-4}$  alkyl, alkylol, haloalkyl or alkoxy,  $C_{2-6}$  alkoxyalkyl, phenyl or a saturated or unsaturated heterocyclic radical having  $C_{5-10}$  ring atoms and containing O, S and/or N atoms, and

 $R_{14}$  and  $R_{16}$  are independently hydrogen,  $C_{1-4}$  alkyl or haloalkyl, phenyl or a heterocyclic  $R_{13}$  member or together with the carbon atom to which they are attached may form a  $C_3$ - $C_7$  spirocycloalkyl group.

Preferred members according to Formula III are those wherein  $R_{13}$  is one of said heterocyclic members and  $R_{14}$  and  $R_{15}$  are independently methyl, trifluoromethyl or when combined with the carbon atom to which attached form a  $C_5$  or  $C_6$  cycloalkyl radical.

Preferred antidotal compounds according to Formula III are the following compounds:

Oxazolidine, 3-(dichloroacetyl)-2,2,5-trimethyl-.

Oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-phenyl-,

Oxazolidine, 3-(dichloroacetyl)-2,2-spirocyclohexyl-,

Oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-(2-furanyl)-,

Oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-(2-thienyl)-,

Pyridine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxazolidinyl]-.

Another group of dichloroacetamide antidotal compounds according to Formula II are the following compounds:

4-(Dichloroacetyl)3,4-dihydro-3-methyl-2H-2,4-benzoxazine,

Ethanone, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolinyl)-,

Cis/trans-piperazine, 1,4-bis(dichloroacetyl)-2,5-dimethyl-,

N-(Dichloroacetyl)-1,2,3,4-tetrahydroquinaldine,

1,5-Diazacyclononane, 1,5-bis(dichloroacetyl),

1-Azaspiro[4,4]nonane, 1-(dichloroacetyl).

Still another preferred group of antidotal compounds according to Formula II which do not have the dichloroacetamide structure are the following compounds:

α-[(Cyanomethoxy)imino]benzeneacetonitrile,

α-[(1,3-Dioxopyran-2-yl-methoxy)imino]benzeneacetonitrile,

5-Thiazolecarboxylic acid, 2-chloro-4-trifluoromethyl, benzyl ester,

Benz nemethamine, N-[4-(dichloromethylene]-1,3-ditholan-2-yliden ]- $\alpha$ -methyl, hydrochlorid ,

Diphenylmethoxy acetic acid, methyl est r,

1,8-Naphthalic anhydride,

4,6-Dichl ro-2-ph nyl-pyrimidine,

2-Chloro-N-[1-(2,4,6-trimethylphenyl)ethenyl]acetamide, and

Ethylene glycol acetal of 1,1-dichloroacetone.

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Th herbicidal and antidotal compounds of Formulae I-IV are known in the art. Th sub-group of 1,3-oxazoli-dine dichl roacetamides of Formula III ar the subject of copending application, Serial No. 07/212,621, of common assignment herewith, priority application for EP 304409 published February 22, 1989.

The term "haloalky!" embraces radicals wherein any one or more of the carbon atoms, preferably from 1 to 4 in number, is substituted with one or more halo groups, preferably selected from bromo, chloro and fluoro. Specifically embraced by the term "haloalky!" are monohaloalkyl, dihaloalkyl and polyhaloalkyl groups. A monohaloalkyl group, for example, may have either a bromo, a chloro, or a fluoro atom within the group. Dihaloalkyl and polyhaloalkyl groups may be substituted with two or more of the same halo groups, or may have a combination of different halo groups. A dihaloalkyl group, for example, may have two bromo atoms, such as a dibromomethyl group, or two chloro atoms, such as a dichloromethyl group, or one bromo atom and one chloro atom, such as a bromochloromethyl group. Examples of a polyhaloalkyl are perhaloalkyl groups such as trifluoromethyl and perfluoroethyl groups.

Preferred haloalkyl R members are dihalomethyl, particularly dichloromethyl, while the preferred haloalkyl R<sub>1</sub> member is a tri-halogenated methyl radical, preferably trifluoromethyl.

Where the term "alkyl" is used either alone or in compound form (as in "haloalkyl"), it is intended to embrace linear or branched radicals having up to four carbon atoms, the preferred members being methyl and ethyl.

By "agriculturally-acceptable salts" of the compounds defined by the above formula is meant a salt or salts which readily ionize in aqueous media to form a cation of said compounds and a salt anion, which salts have no deleterious effect on the antidotal properties of said compounds or of the herbicidal properties of a given herbicide and which permit formulation of the herbicide-antidote composition without undue problems of mixing, suspension, stability, applicator equipment use, packaging, etc.

By "antidotally-effective" is meant the amount of antidote required to reduce the phytotoxicity level or effect of a herbicide, preferably by at least 10% or 15%, but naturally the greater the reduction in herbicidal injury the better.

By "herbicidally-effective" is meant the amount of herbicide required to effect a meaningful injury or destruction to a significant portion of affected undesirable plants or weeds. Although of no hard and fast rule, it is desirable from a commercial viewpoint that 80-85% or more of the weeds be destroyed, although commercially significant suppression of weed growth can occur at much lower levels, particularly with some very noxious, herbicide-resistant plants.

The terms "antidote", "safening agent", "safener", "antagonistic agent", "interferant", "counter-agent", "crop protectant" and "crop protective", are often-used terms denoting a compound capable of reducing the phytotoxicity of a herbicide to a crop plant or crop seed. The terms "crop protectant" and "crop protective" are sometimes used to denote a composition containing as the active ingredients, a herbicide-antidote combination which provides protection from competitive weed growth by reducing herbicidal injury to a valuable crop plant while at the same time controlling or suppressing weed growth occurring in the presence of the crop plant. Antidotes protect crop plants by interfering with the herbicidal action of a herbicide on the crop plants so as to render the herbicide selective to weed plants emerging or growing in the presence of crop plants.

Herbicides which may be used as co-herbicides with the imidazolinones of Formula I with benefit in combination with an antidote of the described class include preferably thiocarbamates (including dithiocarbamates), acetamides, heterocyclyl phenyl ethers (especially phenoxypyrazoles), benzoic acid and its salts, esters and amides, pyridines, and sulfonylureas. It is within the purview of this invention that other classes of herbicides, e.g., triazines, ureas, diphenyl ethers, nitroanilines, thiazoles, isoxazoles, etc., the individual members of which classes may be derivatives having one or more substituents selected from a wide variety of radicals may suitably be used as co-herbicides. Such combinations can be used to obtain selective weed control with low crop injury in several varieties of monocotyledonous crop plants such as corn, grain sorghum (milo), and cereals such as wheat, rice, barley, oats, and rye, as well as several varieties of dicotyledonous crop plants including oil-seed crops such as soybeans and cotton. Particular utility for the antidotal compounds of this invention has been experienced with various herbicides in corn, sorghum and soybeans.

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Examples of important thiocarbamate herbicides are the following:

cis-/trans-2,3-dichloroallyl-disopropylthiolcarbamate (common name "diallate");

ethyl dipropylthiocarbamate (common name "EPTC");

S-ethyl diis butyl (thiocarbamate) (common name "butylate ");

S-propyl dipr pyl(thiocarbamate) (common name "v rnolate");

2,3,3-trichloroallyl-diisopropylthiolcarbamate (common name "triallat ")'

Examples of important acetamide herbicides are th following:

2-chloro-N-isopropylacetanilide (common name "propachlor");

2-chloro-1',6'-diethyl-N-(methoxymethyl)acetanilide (common name "alachlor");
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2-chloro-2',6'-diethyl-N-(butoxymethyl)acetanilide (common name "butachlor");
         2-chloro-N-(ethoxymethyl)-6'-ethyl-o-acetotoluidide (common name "acetochlor");
         ethyl ester of N-chloroacetyl-N- (2,6-diethylph nyl)glycine (common name "diethatyl ethyl");
         2-chloro-N-(2,6-dimethylphenyl)-N-(2-methoxyethyl)acetamide (common name "dimethachlor");
         2-chloro-N-(2-methoxy-1-methylethyl)-6'-ethyl-o-acetotoluidide (common name "metolachlor");
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         2-chloro-2'-methyl-6'-methoxy-N-(isopropoxymethyl)acetanilide;
         2-chloro-2',6'-dimethyl-N-(1-pyrazol-1-yl-methyl)acetanilide (common name "metazochlor")
         2-chloro-N(2,6-dimethyl-1-cyclohexen-1-yl)-N-(1H-pyrazol-1-ylmethyl)acetamide;
         2-chloro-6'-trifluoromethyl-N-(isopropoxymethyl) acetanilide;
         2-chloro-2'-methyl-6'-trifluoromethyl-N-(ethoxymethyl)acetanilide;
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         2-chloro-2'-ethyl-6'-trifluoromethyl-N-(1-pyrazolyl-1-ylmethyl)acetanilide;
          2-chloro-N-isopropyl-1-(3,5,5-trimethylcyclohexen-1-yl)acetamide (common name "trimexachlor").
          Examples of important pyridine herbicides include:
          3-pyridinecarboxylic
                                   acid,
                                             2-(difluoromethyl)-5-4,5-dihydro-2-thiazolyl)-4-(2-methylpropyl)-6-(trif-
         luoromethyl)-, methyl ester;
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                                          2-(difluoromethyl)-4-(2-methylpropyl)-5-(1H-pyrazol-1-ylcarbonyl)-6-(trif-
          3-pyridinecarboxylic
                                  acid,
         luoromethyl)-, methyl ester;
          3,5-pyridine dicarbothioic acid, 2-(difluoromethyl)-4-(2-methylpropyl)-6-(trifluoromethyl)-, S,S-dimethyl
          3,5-pyridinedicarboxylic acid, 2-(difluoromethyl)-4-(2-methylpropyl)-6-trifluoromethyl, dimethyl ester.
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          Examples of important heterocyclyl phenyl ethers include:
          5-(trifluoromethyl)-4-chloro-3-(3'-[1-ethoxycarbonyl]-ethoxy-4'-nitrophenoxy)-1-methylpyrazol;
          5-(trifluoromethyl)-4-chloro-3-(3'-methoxy-4'-nitrophenoxy)-1-methylpyrazole;
          5-(trifluoromethyl)-4-chloro-3(3'-[1-butoxycarbonyl]-ethoxy-4'-nitrophenoxy)-4-methylpyrazol;
          5-(trifluoromethyl)-4-chloro-3-(3'-methylsulfamoylcarbonyl propoxy-4'-nitrophenoxy)-4-methylpyrazol;
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          5-(trifluoromethyl)-4-chloro-3-(3'-propoxycarbonylmethyloxime-4'-nitrophenoxy)-1-methylpyrazole;
          (±)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid (9Cl).
          Examples of important sulfonylureas include:
          Benzenesulfonamide, 2-chloro-N-[[(4-methoxy-6-methyl-1, 3, 5-triazin-2-yi) amino] carbonyl];
          Benzoic acid, 2-[[[[(4-chloro-6-methoxy-2-pyrimidinyl) amino]carbonyl] amino] sulfonyl]- ethyl ester;
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          2-Thiophenecarboxylic
                                   acid.
                                            3-[[[(4,6-dimethoxy-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl]-,
          methyl ester;
          Benzoic acid, 2-[[[[(4, 6-dimethyl-2-pyrimidinyl) amino] carbonyl] amino] sulfonyl] methyl ester;
          Benzenesulfonamide, 2-(2-chloroethoxy)-N-[[(4-methoxy-6-methyl-1, 3, 5-triazin-2-yl)amino] carbonyl];
          Benzoic acid, 2-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl) amino]carbonyl] amino] sulfonyl]-methyl ester;
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          Examples of important benzoic acid derivative herbicides include:
          3,6-Dichloro-2-methoxybenzoic acid (common name "dicamba"),
          2.5-Dichloro-3-aminobenzoic acid (common name "amiben" and "chloramiben"),
          5-(2'-Chloro-4'-trifluoromethylphenoxy)-2-nitrobenzoic acid (common name "acifluorfen"),
          2.6-Dichlorobenzonitrile (common name "dichlobenil"),
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          3,5,6-Trichloro-2-methoxybenzoic acid (common name "Tricamba"),
          2,3,6-Trichlorobenzoic acid, and
          2,3,5,6-Tetrachlorobenzoic acid,
          and salts, esters and amides of the above acids.
          Examples of other important herbicides include:
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          2-Chloro-4-(ethylamino)-6-(isopropylamino)-symtriazine;
          4-Amino-6-tertbutyl-3-(methylthio)-AS-triazine-5(4H)one;
          Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine;
          Benzeneamine, N-(1-ethylpropyl)-3, 4-dimethyl-2, 6-dinitro-;
          2-Pyrrolidinone, 3-chloro-4-(chloromethyl)-1-[3-(trifluoromethyl) phenyl], trans-;
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          3-Isoxazolidinone, 2-[(2-chlorophenyl) methyl]-4, 4-dimethyl-;
          2-Imidazolidinone, 3-[5-(1,1-dimethylethyl)-3-isoxazolyl]-4-hydroxy-1-methyl-;
          2-Chloro-4-(1-cyano-1-methylethylamino)-6-ethylamino-1,3,5-triazine;
          Methyl 5-(2.4-dichl rophenoxy)-2-nitrobenzoate;
          1'-(Carboethoxy) thyl 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrob nz ate;
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          Ammonium-DL-homoalanin-4-yl (methyl) phosphinate;
          2-(3,4-Dichloroph nyl)-4-methyl-1,2,4-oxadiazolidine-3,5-di ne.
          The herbicides of particular and pr ferred interest as co-herbicides with the imidazolin nes of Formula I
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in compositi ns with antidotes according to this invention include each of the above-m ntioned species from different chemical classes of compounds exemplified as important herbicides, particularly those of current commercial interest and use and those which may be determined of commercial utility. Co-herbicidal compounds of preference include the following acetanilides:

alachlor.

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acetochlor,

butachlor.

metolachlor.

metazochlor,

2-chloro-2'-methyl-6'-methoxy-N-(isopropoxymethyl)acetanilide,

2-chloro-2'-methyl-6'-trifluoromethyl-N-(ethoxymethyl)acetanilide, and

2-chloro-2'.6'-dimethyl-N-(2-methoxyethyl)acetanilide.

All of the above specifically-named herbicides are known in the art.

As further detailed infra, while not necessary, the composition containing the herbicide-antidote combination may also contain other additaments, e.g., biocides such as insecticides, fungicides, nematocides, miticides, etc., fertilizers, inert formulation aids, e.g., surfactants, emulsifiers, defoamers, dyes, etc.

Combinations may be made of any one or more of the described antidote compounds with any one or more of the herbicide compounds of Formula I and co-herbicides mentioned herein.

It will be recognized by those skilled in the art that all herbicides have varying degrees of phytotoxicity to various plants because of the sensitivity of the plant to the herbicide. Thus, e.g., although certain crops such as corn and soybeans have a high level of tolerance (i.e., low sensitivity) to the phytotoxic effect of alachlor, other crops, e.g., milo (grain sorghum), rice and wheat, have a low level of tolerance (i.e., high sensitivity) to the phytotoxic effects of alachlor. The same type of sensitivity to herbicides as shown by crop plants is also exhibited by weeds, some of which are very sensitive, others very resistant to the phytotoxic effects of the herbicide.

When the sensitivity of a crop plant to a herbicide is low, whereas the sensitivity of a weed to that herbicide is high, the "selectivity factor" of the herbicide for preferentially injuring the weed while not injuring the crop is high.

In an analogous manner, but more complex, an antidotal compound may, and commonly does, have varying degrees of crop protective effect against different herbicides in different crops. Accordingly, as will be appreciated by those skilled in the art, the various antidotes of this invention, as with all classes of antidotal compounds, will have greater or lesser crop safening effects against various herbicides in various crops than in others. Thus, while a given antidotal compound may have no crop protective ability against a given herbicide in a given crop, that same antidotal compound may have a very high crop protective ability against the same given herbicide in a different crop or against a different herbicide in the same crop. This is an expected phenomenon.

### **DETAILED DESCRIPTION OF THE INVENTION**

### 40 Antidote Compounds

As mentioned earlier, the antidotal compounds used in the practice of this invention are known compounds. The preferred compounds used herein are the 1,3-oxazolidine dichloroacetamides according to Formula III wherein the R<sub>13</sub> member is a heterocyclic radical. Those compounds are separately disclosed and claimed in the assignee's said copending application, Serial No. 07/212,621 and its corresponding EP 304409, published February 22, 1989. The synthesis methods of said EP 304409 for said 1,3-oxazolidine dichloroacetamide antidotes are also disclosed in said U.S. Serial No. 07/212,621, and these documents are hereby incorporated by reference.

### Biological Evaluation

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Effective weed control coupled with low crop injury is a result of treatment of a plant locus with a combination of h rbicide compound and antidote compound. By application to th "plant locus" is meant application to the plant growing medium, such as soil, as well as to the seeds, merging seedlings, roots, stems, leaves, or other plant parts.

The phrase "combination of h rbicide compound and antidot compound" embraces various methods of treatment. For example, the soil of a plant locus may be treated with a "tank-mix" composition containing a mixture of the herbicide and the antidote which is "in combination". Or, the soil may b treated with the herbicide

and antidote compounds separately so that the "combination" is made on, or in, the soil. After such treatments of the soil with a mixture of herbicide and antidote or by separate or sequential application of the herbicide and antidote to the soil, the herbicide and antidote may be mixed into or incorporated into the self-either by mechanical mixing of the soil with implements or by "watering in" by rainfall or irrigation. The soil of a plant locus may also be treated with antidote by application of the antidote in a dispersible-concentrate form such as a granule. The granule may be applied to a furrow which is prepared for receipt of the crop seed and the herbicide may be applied to the plant locus either before or after in-furrow placement of the antidote-containing granule so that the herbicide and antidote form a "combination". Crop seed may be treated or coated with the antidote compound either while the crop seed is in-furrow just after seeding or, more commonly, the crop seed may be treated or coated with antidote prior to seeding into a furrow. The herbicide may be applied to the soil plant locus before or after seeding and a "combination" is made when both herbicide and antidote-coated seed are in the soil. Also contemplated as a "combination" is a commercially-convenient association or presentation of herbicide and antidote. For example, the herbicide and antidote components in concentrated form may be contained in separate containers, but such containers may be presented for sale or sold together as a "combination". Or, the herbicide and antidote components in concentrated form may be in a mixture in a single container as a "combination". Either such "combination" may be diluted or mixed with adjuvants suitable for soil applications. Another example of a commercially-presented combination is a container of antidote-coated crop seed sold, or presented for sale, along with a container of herbicide material. These containers may, or may not, be physically attached to each other, but nonetheless constitute a "combination of herbicide and antidote" when intended for use ultimately in the same plant locus.

In the foregoing description of various modes of application of the herbicide-antidote combinations, it is inherent that each form of application requires that in some manner, the herbicide and antidote will form a "composition" of those agents.

The amount of antidote employed in the methods and compositions of the invention will vary depending upon the particular herbicide with which the antidote is employed, the rate of application of the herbicide, the particular crop to be protected, and the manner of application to the plant locus. In each instance the amount of antidote employed is a safening-effective amount, that is, the amount which reduces, or protects against, crop injury that otherwise would result from the presence of the herbicide. The amount of antidote employed will be less than an amount that will substantially injure the crop plant.

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The antidote can be applied to the crop plant locus in a mixture with the selected herbicide. For example, where the crop seed is first planted, a suitable mixture of antidote and herbicide, whether in a homogeneous liquid, emulsion, suspension or solid form, can be applied to the surface of, or incorporated in, the soil in which the seed has been planted. Or, the herbicide-antidote mixture may be applied to the soil, and then the seed thereafter "drilled" into the soil below the soil layer containing the herbicide-antidote mixture. The herbicide will reduce or eliminate the presence of undesirable weed plants. Where the herbicide would by itself injure the crop seedlings, the presence of the antidote will reduce or eliminate the injury to the crop seed caused by the herbicide. It is not essential that the application of herbicide and the antidote to the plant locus be made using the selected herbicide and antidote in the form of a mixture or composition. The herbicide and the antidote may be applied to the plant locus in a sequential manner. For example, the antidote may be first applied to the plant locus and thereafter the herbicide is applied. Or, the herbicide may be first applied to the plant locus and thereafter the antidote is applied.

The ratio of herbicide to antidote may vary depending upon the crop to be protected, weed to be inhibited, herbicide used, etc., but normally a herbicide-to-antidote ratio ranging from 1:25-to-60:1 (preferably 1:5-to-30:1) parts by weight may be employed, although much higher rates of antidote may be used, e.g., 1:100-1:300 parts by weight of herbicide-to-antidote. As indicated above, the antidote may be applied to the plant locus in a mixture, i.e., a mixture of a herbicidally-effective amount of herbicide and a safening-effective amount of an antidote, or sequentially, i.e., the plant locus may be treated with an effective amount of the herbicide followed by a treatment with the antidote or vice versa. In general, effective herbicidal amounts are in the range of about 0.03 to about 12 kilograms/hectare, but rates as low as 0.004 kg/ha may be used effectively. The preferred range of rate of application is from about 0.1 to about 10 kg/ha. Preferably, antidote application rates range from about 0.5 kg/ha down to about 0.05 kg/ha. It will be appreciated that at times amounts either below or above these ranges will be necessary to obtain the best results. The selection of the herbicide to inhibit the emergence and growth of weeds depends upon the species of weeds to be controlled and the crop to be protected.

The application of the antidote can be made directly to the seed b fore planting. In this practice, a quantity of crop seed is first coated with the antid t. The coated seed is thereafter planted. The herbicide may be applied to the soil before or after the coated seed is planted.

In field applications, the herbicide, antidote, or a mixtur thereof, may be applied to the plant locus without

any adjuvants other than a solvent. Usually, the herbicide, antidote, or a mixture there f, is applied in conjunction with n or more adjuvants in liquid or solid form. Compositions or formulations containing mixtures of an appropriate herbicide and antidote usually are prepared by admixing the herbicid and antidote with n r more adjuvants such as diluents, solvents, extenders, carriers, conditioning agents, water, wetting agents, dispersing agents, or emulsifying agents, or any suitable combination of these adjuvants. These mixtures may be in the form of particulate solids, granules, pellets, wettable powders, dusts, solutions, aqueous dispersions, or emulsions

Application of the herbicide, antidote, or mixture thereof, can be carried out by conventional techniques utilizing, for example, hand-carried or tractor-mounted spreaders, power dusters, boom and hand sprayers, spray dusters, and granular applicators. If desired, application of the compositions of the invention to plants can be accomplished by incorporating the compositions in the soil or other media.

Evaluations of safening activity of a wide variety of representative antidote compounds and imidazolinone compounds according to this invention were carried out using the specific procedures of Examples 5-13 below in greenhouse testing. Measurements of biological response as reported in Tables 1-9 were made in the following manner. A visual comparison was made between a crop plant treated with a herbicide alone and crop plant having no herbicide or antidote treatment. A number was assigned to this visual comparison indicating the percent injury or inhibition to the herbicide-alone treated crop plant (column "WO" in Tables 1 and 2 indicating herbicide "without" antidote). Also, a visual comparison was made between the crop plant treated with herbicide+antidote combination and the crop plant having no herbicide or antidote treatment. A number was assigned to this visual comparison indicating the percent injury or inhibition to the herbicide+antidote treated crop plant (column "W" in Tables 1 and 2 indicating herbicide "with" antidote). Observations of response by the weed species to herbicide or herbicide+antidote were similarly recorded. The degree of reduction of herbicide injury provided by an antidote compound is indicated by the magnitude that the plant inhibition number of column "WO" exceeds the corresponding number of column "W". Also reported in Tables 1 and 2 are data in parenthesis showing "safening effect" (defined below) for the herbicide+antidote combinations calculated from the plant inhibition numbers. These tables show crop or weed column headings under which there are no data. The lack of such data is not an indication of a failed test; rather it is merely an indication that the particular herbicide+antidote rate combination was not tested with that crop or weed.

In Tables 1 and 2 the symbols used have the following meanings:

W = % Plant Inhibition caused by combination of of herbicide and antidote.

WO = % Plant Inhibition caused by herbicide alone.

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Data reported in parentheses = % Safening Effect () = 
$$\frac{WO - W}{WO}$$
 X 100

Herbicide and antidote rates in all tables below are given in kilograms per hectare (Kg/ha).

Listed below are the names of the herbicidal and antidotal compounds for which data are reported in the Tables.

	Herbicide No.	Compound
5	1	3-Quinolinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl], (common name "imazaquin", active ingredient
,5		in SCEPTER® herbicide),
15	2	3-Pyridinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl], (common name "imazapyr", active ingredient
20		in ARSENAL® herbicide),
	3	Benzoic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-
25		1H-imidazol-2-yl]-4 (or 5)-methyl-, (common name "AC-222,293", active ingredient in ASSERT® herbicide),
<b>30</b>	4	3-Pyridinecarboxylic acid, 5-ethyl- 2-[4-methyl-4-(1-methylethyl)-5-oxo-
35		1H-imidazol-2-yl], (common name "imazethapyr" [also "AC 263,499"], active ingredient in PURSUIT® herbicide), and
40	5	2-Dyridinosykawalis ali a com
45	J	3-Pyridinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-methyl-,
45		ammonium salt, (common name "AC-263,222", active ingredient
50		in CADRE® herbicide).

	Antidote No.	Compound
5	1	Acetamide, N,N-Bis(2-propenyl)-Alpha,Alpha-dichloro-,
10	2	Cis/trans-piperazine, 1,4-bis- (dichloroacetyl)-2,5-dimethyl-,
15	3	5-Thiazolecarboxylic acid, 2-chloro-4-(trifluoromethyl)-, (phenylmethyl) ester,
20	. 4	Oxazolidine,3-(dichloroacetyl)- 2,2,5-trimethyl-,
25	5	<pre>Benzeneacetonitrile, Alpha- [(cyanomethoxy)imino]-,</pre>
30	6	Oxazolidine,3-(dichloroacetyl)- 2,2-dimethyl-5-phenyl)-,
35	7	<pre>Benzeneacetonitrile, Alpha- [[(1,3-dioxolan-2-yl)methoxy] imino)]-,</pre>
40	8	1H-1,2,4-Triazole,1-[[(1,1-dimethylethyl)dimethylsilyl]-(phenylsulfonyl)methyl]-,
45	9	1-Diazacyclononane, 1,5-Bis- (Dichloroacetyl)-,
50 ·	10	<pre>1-Azaspiro[4.4]nonane, 2- (dichloroacetyl)-,</pre>

	Antidote No.	Compound
5	11	Acetamide, 2,2-dichloro-N-(1,3-dioxolan-2-ylmethyl)-N-2-propenyl-,
10	12	1-Azaspiro[4.5]decane, 1-bromochloroacetyl-,
15	13	Oxazolidine, 3-(dichloro-acetyl)-2,2-dimethyl-5-(2-thienyl)-,
20	14	Ethanone, 2,2-dichlo4o-1- (1,2,3,4-tetrahydro-1-methyl- 2-isoquinolinyl)-,
25	15	1,3-dioxolane, 2-(dichloro-methyl)-2-methyl-,
30	16	Acetamide, 2-chloro-N-[1-(2,4,6-trimethylphenyl)-ethenyl]-,
35	17	Oxazolidine, 3-(dichloro-acetyl)-3,2,2-trimethyl-,
40	18	Pyrrolo[1,2-a]pyrimidin-6(2H)- one, 1-(dichloroacetyl)hexa-
45	19	hydro-3,3,8a-trimethyl,  Oxazolidine, 3-(dichloroacetyl)- 5-(2-furanyl)-2,2-dimethyl-,
50	20	Pyridine, 3-[3-(dichloro-acetyl)-2,2-dimethyl-5-oxa-
55		zolidinyl]-,

	Antidote No.	Compound
5	21	Para chlorophenylthio acetonitrile,
10	22	Piperazine, 1, 4-bis (dichloro-acetyl)-,
15	23	Benzenemethanamine, N-[4- (dichloromethylene)-1,3- dithiolan-2-ylidene]-alpha- methyl-, hydrochloride,
20	24	1H,3H-naphtho[1,8-cd]pyran- 1,3-dione,
25	25	Phosphonic acid, (alpha- (dichloroacetamido)methyl)-, diphenyl ester,
30	26	Piperazine, 1,4-bis(dichloro-acetyl)-,2,6-dimethyl-,
35	27	5-thiazolecarboxylic acid, 2-chloro-, 2-chloroethyl ester, 4-(trifluoromethyl)-,
40	28	5-oxazolecarboxylic acid, 2-[(1,1-dimethylethyl)amino]- 4-(trifluoromethyl)-, ethyl
45	29	ester, Acetic acid, (diphenylmethoxy)-, methyl ester,
50		

	Antidote No.	Compound
5	30	5-Thiazolecarbothioic acid, 2-chloro-4-(trifluoromethyl)-, S-(phenylmethyl)ester,
10	31	Acetamide, 2,2-dichloro-N- [3,5-bis(trifluoromethyl)- phenyl]-,
15	32	Quinoline, 1-(dichloroacety1)- 1,2,3,4-tetrahydro-2-methy1-,
20	33	<pre>Isoquinoline, 2-(dichloro- acetyl)-1,2,3,4-tetrahydro-,</pre>
25	34	Quinoline, 1-(dichloroacetyl)- 1,2,3,4-tetrahydro-,
30	35	Quinoline, 1-(dichloroacetyl)- 1,2-dihydro-2,2,4-trimethyl-,
35	36	Acetamide, 2,2-dichloro-N- [2-nitro-4-(trifluoromethyl)- phenyl]-,
40	37	Acetamide, 2,2-dichloro-N-(3-fluorophenyl)-,
45	38	Acetamide, 2,2-dichloro-N-(2,5-difluorophenyl)-,
. 50	39	1,4-dioxa-8-azaspiro[4,5]- decane, 8-(dichloroacetyl)-,

	Antidote No.	Compound
5	40	Thiazolidine, 3-(dichloro-acetyl)-,
10	41	Acetamide, N-[(1,1'-biphenyl)-2-yl]-2,2-dichloro-,
15	42	Acetamide, 2,2-dichloro-N- [2-[2-[(dichloroacetyl)- amino]phenyl]phenyl]-,
20	43	<pre>1-Azaspiro[4.4]nonane, 1- bromochloroacetyl-,</pre>
25	44	Acetamide, 2,2-dichloro-N- [(3-methoxyphenyl)methyl]- N-(2-propenyl)-,
30	45	Acetamide, N-[1,1'-biphenyl]-3-yl-2,2-dichloro-,
35	46	Acetamide, 2-chloro-N-[1-(2,6-dichlorophenyl)ethenyl]-,
40	47	<pre>1-oxa-4-azaspiro[4.5]decane, 4-bromochloroacetyl-,</pre>
	48	Acetamide, 2,2-dibromo-N,N-di-2-propenyl-,
45	49	Acetamide, N,N-bis[(3-buty-nyloxy)methyl]-2,2-dichloro-,
50	50	Acetamide, N,N-bis[(3-penty-nyloxy)methyl]-2-chloro-,

	Antidote No.	Compound
5	51	Acetamide, 2,2-dichloro-N,N-bis[(3-pentynyloxy)methyl]-,
10	52	<pre>Isoquinoline, 2-(dichloro- acetyl)-1,2,3,4-tetrahydro- l-propyl-,</pre>
15	53	<pre>1H-isoindole, 2-(dichloroacetyl) 2,3-dihydro-,</pre>
20	54	<pre>Isoquinoline, 2-(dichloroacetyl)- 1,2,3,4-tetrahydro-1-(1-methyl- ethyl)-,</pre>
25	55	Acetamide, 2,2-dichloro-N-[1-(2,4,6-trimethylphenyl)-ethenyl]-,
30	56	Acetamide, 2,2-dichloro-N-ethyl-N-(methoxymethyl),
35	57	Acetamide, 2,2-dichloro-N-2-propenyl-N-[3-(trifluoro-methyl)phenyl]-,
<b>40</b>	58	Acetamide, N,N'-1,2-ethane-diylbis[2,2-dichloro-N-(2-methyl-1-propenyl)]-,
50	59	Quinoxaline, 1,4-bis(dichloro-acetyl)-1,2,3,4-tetrahydro-,

	Antidote No.	Compound
5	60	1H-1,4-diazonine, 1,4-bis- (dichloroacetyl)octahydro-,
10	61	<pre>lH-1,5-diazonine, 1,5-bis- (bromochloroacetyl)octahydro-, .</pre>
15	62	<pre>1H-1,5-diazonine, 1,5-bis- (dibromoacetyl)octahydro-,</pre>
20	63	<pre>1H-1,5-diazonine, 1,5-bis- (dichloroacetyl)octahydro- 3-methyl-,</pre>
25	64	· 1H-1,5-diazonine, 1,5-bis- (dichloroacetyl)octahydro- 2-methyl-,
30	65	7-Azaspiro[4.5]decane, 7- (dichloroacetyl)-8,8-dimethyl-,
35	66	Quinoaline, 1,4-bis(dichloro-acetyl)-1,2,3,4-tetrahydro-2-methyl-,
40	67	<pre>Isoquinoline, 2-(dichloro- acetyl)-1,2,3,4-tetrahydro- 1-(trifluoromethyl)-,</pre>
45	68	Acetamide, 2,2-dichloro-N-ethyl-N-(2-phenylethyl)-,
50	69	Acetamide, 2,2-dichloro-N- (ethoxymethyl)-N-(2-phenyl- ethyl)-,

	Antidote No.	Compound
5	70	<pre>Isoquinoline, 2-(dichloro- acetyl)-1,2,3,4-tetrahydro- 1,3-dimethyl-,</pre>
10	71	<pre>Isoquinoline, 2-(dichloro- acetyl)-1-ethyl-1,2,3,4- tetrahydro-3-methyl-,</pre>
15	72	<pre>Isoquinoline, 2-(dichloro- acetyl)-1,2,3,4-tetrahydro- 1,7-dimethyl-,</pre>
20	73	1,5-diazocine, 1,5-bis(di-chloroacetyl)octahydro-,
25	74	Piperazine, 1,4-bis(dichloro-acetyl)-2-methyl-5-(1-methyl-ethyl)-, (2S,5R-trans)-,
30	75	Piperazine, 1,4-[bis(dichloro-acetyl)]-2-phenyl-,
35	76	Oxazolidine, 3-(dichloro-acetyl)-5-(3-furanyl)-2,2-dimethyl-,
45	77	4-Pentenenitrile, 2-methyl-2- [(4-methylphenyl)thio]-
	T1 6.01 1 1 1 11	

The following examples describe preparation of exemplary formulations of herbicide and antidote and mixtures thereof.

# Example 1

An emulsifiable concentrate type formulation containing acetochlor was prepared containing the following components :

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		% by Wt.
	Acetochlor (93.1% technical)	87.13
5	Epoxy soybean oil	0.91
	Witco C-5438 emulsifier (blend	
	of anionic/non-ionic emulsi-	
10	fiers in ethylene glycol);	
	Witco Chemical Co., New	
	York, N.Y.	9.00
	Orchex 796 (a spray oil filter)	2.93
15	GE AG-78 antifoaming agent	
	(polysiloxane); General	
	Electric Co., Waterford, N.Y	. 0.02
20	Methyl violet dye; Dye Specialtie	s
	Co., Jersey City, N.J.	0.01

These components were mixed together at room temperature until a uniform blend was obtained. The formulation had a specific gravity of 1.1101 observed at 20°C and calculated against water at 15.6°C., and had a flash point above 200°C (tag closed-cup method). The formulation showed fair emulsion bloom at water hardness concentrations of 114 ppm, 342 ppm and 1000 ppm. The emulsions had 1 ml cream after one hour at each water hardness concentration. The formulation was a purple viscous liquid and contained 87.13% by weight of acetochlor.

### Example 2

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An emulsifiable concentrate formulation containing 1-oxa-4-azaspiro (4,5) decane, 4-(dichloroacetyl), having the common name "AD-67" as the antidote compound was prepared for use in various tests. AD-67 is also named oxazolidine, 3-(dichloroacetyl)-2,2-spirocyclohexyl-. The formulation contained the following ingredients:

40		% by wt.
	AD-67 (93.5% tech)	11.44
	Sterox NJ	0.77
45	FLOMO 54C	5.96
	FLOMO 50H emulsifier	3.27
	Monochlorobenzene	78.55

These components were mixed together at room temperature until a uniform blend was obtained. The formulation had a specific gravity of 1.1222 observed at 20°C calculated against water at 15.6°C, a solution point of <0°C, and a flash point less than 32°C. The formulation showed good bloom at a concentration in water of 1000 ppm, and perfect bloom at 100 and 342 ppm. Emulsions containing 5% f the formulation were observed on hour after pr paration as having a trac cream layer at 114 ppm, and 2 ml layer at 342 ppm and at 1000 ppm water-hardn ss concentrations.

## Example 3

An mulsifiable concentrate formulation containing oxazolidine, 3-(dichloroacetyl)-2,2-dim thyl-(5-furanyl)-, was prepared for use in field tests as described later herein. This EC contained the following ingredients:

		% by wt.
5	Active ingredient	
	(the above compound)	10.77
	Monochlorobenzene	79.23
10	Witconate P 1220	4.19
	Witconol CO-360	5.45
	Witconol NP-330	0.36

The above formulation had a specific gravity of 1.1220 at 20°C calculated against water at 15.6°C and a flash point of 37.8°C (100°F). The formulation exhibited poor bloom in water at concentrations of 114, 342 and 1000 ppm. Emulsions containing 5% of this formulation exhibited a 1 ml layer at the 114 and 342 ppm concentrations and a 10 ml layer at the 1000 ppm concentration.

#### 20 Example 4

Commercially-available or in-house formulations of other herbicides and antidotes used in Examples 5-13 and Tables 1-9 had the following initial compositions (in weight percent) which were then mixed where desired with an appropriate carrier to provide the desired application rate in kg/ha:

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		Active	
	<u>Herbicide</u>	Ingredient	Inerts
30			
	SCEPTER® Herbicide	17.3	82.7
	ARSENAL® Herbicide	27.6	72.4
	ASSERT® Herbicide	45.5	54.5
35	PURSUIT® Herbicide	25.0	75.0
	CADRE® Herbicide	25.0	75.0
	Acetochlor	87.3	12.7
40	Metolachlor	86.4	13.6

Antidotes - Formulated in acetone to a concentration corresponding to the application rate per hectare.

### Example 5

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The following procedure shows interaction between a herbicide and an antidote when the antidote is applied in a soil furrow containing crop seed and the herbicide is incorporated in a soil cover layer. Containers were filled and compacted with furnigated silt loam soil to a depth of about 1.3 cm from the top of the container. A first container was designated as an untreated control, a second container was designated as a herbicide control, and a third container was designated as a herbicide + antidote test container. Each container was seeded with crop seed in marked furrows. Antidote compound, dissolved in acetone, was applied directly to the seeded furrows of the third container. Antidote application rate was 0.55 mg active compound per inch of furrow (0.22 mg/cm). This rate was comparable to a plot application rate of 0.28 kilogram per hectare (kg/ha), based on 76 cm (30") spaced-apart furrows. Then, each of the second and third containers was filled and leveled with a cover layer of soil having incorporated therein the selected herbicid at a pre-determined concentration. The first contain of was fill d and leveled with soil containing no horbicid. Pota were overhead irrigated with 0.6 cm (1/4"), then placed on a bench in a greenhouse and sub-irrigated as required for the duration of the test. Plant response was observed about through the weeks after initial treatment. Results an ereported in Table

1.

% PLANT INHIBITION AND % SAFENING EFFECT ( )

PIGWEED	REDROOT	M WO	85 88 (4)	(0) 06 06	80 88 (10)	(0) 06 06	88 88
CORN		W WO	80 95	(37)	75 95 (22)	40 95	90 95
		RATE	0.28	0.28	0.28	0.28	0.28
ANTI-	DOTE	NO.	21	21	22	22	23
		RATE	0.14	0.56	0.14	0.56	0.14
	HERB.	NO.	<b>.</b>	4	1	4	H

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20	FFECT ( )						
25	tinued) SAFENING E						
<b>30</b>	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED REDROOT W WO	95 90	85 88 (4)	(o) 06 06	85 88 (4)	95 90
35	T LANT INHIBI	CORN W WO	95 95	65 95 3	30 95	(9)	95 95 9
40	સ્ <b>ર</b>	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	23	24	54	25	25
50		RATE	0.56	0.14	0.56	0.14	0.56

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15							
20	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )						
25	ontinued) % SAFENING						
30	Table 1 (continued)	PIGWEED REDROOT W WO	80 88 (10)	95 90	88 06	06 06	88 06
35	LANT INHIB	CORN W WO	95 95	95 95	95 95	95 95	80 95
40	94 <u>C</u> 1	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	56	56	ო	ო	27
		RATE	0.14	0.56	0.14	0.56	0.14
50		HERB.	1	4		4	1

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20	•	EFFECT ( )							
25	ontinued)	% PLANT INHIBITION AND % SAFENING EFFECT ( )							
<i>30</i>	Table 1 (continued)	ITION AND 9	REDROOT	W WO	85 88 (4)	(0)	98 88	(0) 06 06	60 88 (32)
35		LANT INHIB		w wo	95 95 (0)	80 95	80 95	75 95 (22)	95 95 (0)
40	7			RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI-	DOTE	NO.	Ŋ	Ŋ	28	28	28
50				RATE	0.14	0.56	0.14	0.56	0.14
			HERB.	NO.		4	<b>~</b>	4	F

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20	EFFECT ( )						
25	ntinued) , SAFENING						
30	Table 1 (continued) SITION AND % SAFENIN	PIGWEED REDROOT W WO	95 90	85 88 (4)	95 90	85 88 (4)	95 90
35	Table 1 (continued)	CORN W WO	65 95 (32)	95 95	90 95 95 90	75 95 85 (22) (4	80 95
40	<b>₹</b>	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	20	30	30	31	31
50		RATE	0.56	0.14	0.56	0.14	0.56
50		HERB.	4	-	4	1	4

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20	EFFECT ( )						
25	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )						
30	Table 1 (G BITION AND	PIGWEED REDROOT W WO	80 88 (10)	06 06	90 88	95 90	80 88 (10)
35	PLANT INHI	CORN W WO	90 95	95 95 (0)	95 95	85 95 (11)	95 95
40	84	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	32	32	33	33	34
50		RATE	0.14	0.56	0.14	0.56	0.14
		ERB.	~	7	<b>~</b>	•	<b>—</b>

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15				•			
20	EFFECT ( )						
25	ontinued) % SAFENING						
30	Table 1 (continued)	PIGWEED REDROOT W WO	85 90	85 88 (4)	(0)	88 06	(0) 06 06
35	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN W WO	75 95 (22)	95 95	95 95	100 95	95 95
40	9€	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	34	35	<b>S</b> E .	36	36
50		RATE	0.56	0.14	0.56	0.14	0.56
		HERB.	4	Ħ	4	p=4	4

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15									
20		FFECT ( )							
25	tinued)	SAFENING EI							
30	Table 1 (continued)	FION AND %	PIGWEED REDROOT	w wo	60 88 (32)	(0)	25 88 (72)	(0)	88 06
35	Ë	% PLANT INHIBITION AND % SAFENING EFFECT	CORN	M WO	95 95 6	95 95 9	100 95 2	(0)	95 95 9
40		<b>₹</b>		RATE	0.28	0.28	0.28	0.28	0.28
45			ANTI- DOTE	NO.	37	37	38	38	39
50				RATE	0.14	0.56	0.14	0.56	0.14
			83	<u>.</u>	-	4	<b>-</b>	4	-

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20	EFFECT ( )						
25	ntinued)		·				
30	Table 1 (continued)	PIGWEED REDROOT W WO	(o) 06 06	(4)	06 06	85 88 (4)	85 90 (6)
35	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN W WO	85 95	95 95	75 95 (22)	95 95 8	90 95 8 (6)
40	<b>%</b>	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	39	70	70	41	41
		RATE	0.56	0.14	0.56	0.14	0.56
50		HERB.	4		4		4

5 10 15 % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Table 1 (continued) 25 PIGWEED REDROOT M M 30 06 06 85 88 80 90 88 (12) 85 88 3 9 (4) 82 8 95 95 50 95 92 60 95 95 95 CORN (37) 9 9 9 35 90 RATE 40 0.28 0.28 0.28 0.28 ANTI-DOTE NO. 42 42 43 43 77 45 RATE 0.56 0.14 50 HERB.

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20	FECT ( )						
25	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )						
30	Table 1 (continued)	PIGWEED REDROOT W WO	(0) 06 06	80 88 (10)	95 90	(10)	95 90
35	T. ANT INHIBI	CORN 1	45 95 (53)	(0)	85 95 (11)	95 95	95 95
40	1d %	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	74	45	45	97	97
50		RATE	0.56	0.14	0.56	0.14	0.56
50		HERB.	4	<b>.</b>	4	-	4

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15								
20	FFECT ( )							
25	atinued) SAFENING E							
30	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT (	PI GWEED REDROOT	W WO	(15)	(0)	(10)	80 90 (12)	(4)
35	T LANT INHIB	CORN	34 ₹ 50 50 50 50 50 50 50 50 50 50 50 50 50		80 95	80 95 (16)	60 95	(9)
40	96 Ü		RATE 0.28		0.28	0.28	0.28	0.28
45		ANTI- DOTE	NO.	÷	47	13	13	87
50			RATE		0.56	0.14	0.56	0.14
		HERB.	NO.	•	4	-	4	<b>~</b>

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Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )

PIGWEED	REDROOT	0A A	85 90	88 06	85 90 (6)	95 88	100 90
CORN		M WO	80 95	95 95	90 95	100 95	100 95
		RATE	0.28	0.28	0.28	0.28	0.28
ANTI-	DOTE	NO.	87	64	67	20	20
		RATE	0.56	0.14	0.56	0.14	0.56
	HERB.	NO.	4	1	4	-	4

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Table 1 (continued)
% PLANT INHIBITION AND % SAFENING EFFECT ( )

PI GWEED REDROOT	W WO	90 88	(0)	85 88 (4)	06 06	88 08
CORN	ow w	95 95	95 95	95 95	06 06 80 06	95 95
	RATE	0.28	0.28	0.28	0.28	0.28
ANTI-DOTE	NO.	51	51	52	52	53
	RATE	0.14	0.56	0.14	0.56	0.14
HERB.	NO.	FF.	4	, <b>=</b>	4	<b>-</b>

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15									
20		FECT ( )							
25	ntinued)	% PLANT INHIBITION AND % SAFENING EFFECT							
30	Table 1 (continued)	TION AND %	PIGWEED REDROOT	M WO	(o)	85 88 (4)	95 90	88 06	(0)
35	H	ANT INHIBI	CORN	ow w	95 95	65 95 (32)	15 95 (85)	95 95	65 95 (32)
40		74 M		RATE	0.28	0.28	0.28	0.28	0.28
45			ANTI-	NO.	53	54	54	55	55
50				RATE	0.56	0.14	0.56	0.14	0.56
			gash	NO.	7	ı	4	F	4

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10								
15								
20	EFFECT ( )							
25	tinued) SAFENING							
30	Table 1 (continued)	PIGWEED REDROOT	M W0	88 06	(0)	80 88 (10)	95 90	70 88 (21)
35	1 INT INHIBI	CORN	N NO	80 95	90 95	70 95	55 95 (43)	85 95
40	% PLA		RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE	NO.	26	56	57	57	58
50			RATE	0.14	0.56	0.14	0.56	0.14
		HERB.	NO.	r.	4	-	4	г

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20		EFFECT ( )							
25	ontinued)	% PLANT INHIBITION AND % SAFENING EFFECT ( )							
30	Table 1 (continued)	ITION AND	PIGWEED REDROOT	0A A	95 90	85 88 (4)	(0) 06 06	80 88 (10)	60 95 90 90 (37) (0)
35	-	LANT INHIB	CORN	M WO	55 95 (43)	75 95 (22)	85 95	95 95	60 95
40		<b>%</b>		RATE	0.28	0.28	0.28	0.28	0.28
45			ANTI-DOTE	NO.	58	59	59	09	09
50				RATE	0.56	0.14	0.56	0.14	0.56
			HERB.	NO.	4	1	4		4

10 15 % PLANT INHIBITION AND % SAFENING EFFECT ( ) Table 1 (continued) PIGWEED REDROOT W WO 80 90 80 88 80 88 45 95 95 95 95 95 Ş (53) CORN 9 9 3

RATE 0.28 0.28 0.28 0.28 0.28 ANTI-DOTE МО. 61 61 62 62 63 RATE 0.14 0.56 0.14 0.56 0.14 HERB. . 80 4 4

90 90

5 95

(95)

90 88

85 95

(11)

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15							
20	SFFECT ( )						
25	safening H						
30	Table 1 (continued)	PIGWEED REDROOT W WO	95 90	85 88 (4)	(9)	80 88 (10)	06 06
35	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT	CORN W WO	25 95 (74)	90 95	90 95	95 95	95 95
40	% PI	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	63	79	79	65	<b>6</b>
		RATE	0.56	0.14	0.56	0.14	0.56
50		HERB.	4	FF.	4	-	4

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15							
20	FFECT ( )						
25	atinued) SAFENING E						
30	Table 1 (continued) ITION AND % SAFENIN	PI GWEED REDROOT W WO	85 88 (4)	95 90	80 88 (10)	06 06	85 88 (4)
35	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN W WO	85 95	(9)	95 95	65 95 9	95 95 8
40	9-6 D1	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	99	99	29	67	89
50		RATE	0.14	0.56	0.14	0.56	0.14

HERB.

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20	FECT ( )						
25	inued) AFENING EF						
30	Table 1 (continued) NITION AND % SAFENIN	PIGWEED REDROOT W WO	(6)	88	(9)	88	06 9
35	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN PI RE	40 95 85 (58) (6)	95 95 90	80 95 85 (16) (6	95 95 95	50 95 95
40	% PL	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	89	69	69	70	0/
50		RATE	0.56	0.14	0.56	0.14	0.56
<i></i>	·	.RB.	4	<b>F</b> **	4	-	<b>.</b> +

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15							
20	EFFECT ( )						
25	ntinued) , SAFENING )						
30	Table 1 (continued)	PIGWEED REDROOT W WO	85 88 (4)	85 90	95 88	06 06	85 88 (4)
35	Table 1 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN W WO	90 95	70 95	95 95	75 95 (22)	75 95 (22)
40	94 Er	RATE	0.28	0.28	0.28	0.28	0.28
45		ANTI- DOTE NO.	71	11	72	72	73
50		RATE	0.14	0.56	0.14	0.56	0.14
		HERB.	1	4	-	4	-

5							
· 10							
15							
20	EFFECT ( )						
25	Table 1 (continued)						
30	Table 1 (continued) SITION AND % SAFENIN	PIGWEED REDROOT W WO	06 06	95 88	95 90	85 88 (4)	95 90
35	T	CORN W WO	85 95	80 95	80 95	(9)	90 95
40	<u>ሬ</u> %	RATE	0.28	0.28	0.28	0.28	0.28
<b>45</b>		ANTI- DOTÉ NO.	73	14	14	75	27
50		RATE	0.56	0.14	0.56	0.14	0.56

HERB.

5	
10	
15	

Table 1 (continued)

% PLANT INHIBITION AND % SAFENING EFFECT ( )

PIGWEED	REDROOT	W0	88	06
PIG	RED]	Ø. ₩	90 95 80 88 (6)	55 95 90 90
		M WO	95	95
CORN		3	9)	55
		RATE	0.28	0.28
ANTI-	DOTE	NO.	9/	91
		RATE	0.14	0.56
	HERB.	NO.	-	4

<u>0</u>

(43)

#### Exampl 6

The following procedure shows interaction between herbicid and antidote when both are incorporated in a soil cover layer before emergnece of crop and weed species. Containers were filled and compacted with a fumigated silt loam top soil to a depth of about 1.3 cm from the top of the container. A first container was designated as an untreated control, a second container was designated as a herbicide control, and a third container was designated as a herbicide and athird container was designated as a herbicide of the containers was seeded with a crop species. A measured amount of herbicide dispersed or dissolved in acetone was applied to a measured quantity of soil. To this same quantity of soil treated with herbicide, there was added a measured amount of antidote dispersed or dissolved in acetone. The quantity of soil treated with the herbicide and antidote was thoroughly mixed to incorporate the herbicide and antidote in the soil uniformly. The seed bed in the third container of soil was covered with the soil treated with the herbicide and antidote and the container was leveled. For each test series, the seed beds of the first and second containers were likewise covered by soil layers. The cover layer of the first container was not treated with herbicide or antidote. The cover layer of the second container had a measured quantity of herbicide alone incorporated therein, the containers were then placed on a bench in a greenhouse and sub-irrigated as required for the duration of the test. Plant response was observed about three weeks after initial treatment. Results are reported in Table 2.

% PLANT INHIBITION AND % SAFENING EFFECT ( )

Table 2

TARTARY	BUCKWHEAT	<b>%</b>	25 25	(0)	20		25	(6)	40 50	(20)	10 25	(09)
TA	BO	3	25		9		25	3	40	ప	10	۳
*		8	25 25	_	80	_	25	(09)	80	_	25	_
S	•	3	25	0	80	<u> </u>	10 25	9	90 75 80	(3)	25	<u>e</u>
PIGWEED CORN	REDROOT	<b>%</b>	80 65		06	_	65		90		65 25 25	
PIG	RED	3			100 97 90 90 80 80	9	95 65		95		20	
AT		Ø.	30 45	7	46		25 45	3	85 97	<b>~</b>	97 0	60
WHE		3	30	(34)	100		25	(42)	82	(13)	0	(100)
SORGHUM WHEAT	GRAIN	MO M	15 35	(58)	95		35		95	5		(72)
SOR	S.	3	15	(2)	90 95	(9)	80 35		60 95	(37)	10 35	(72
		RATE	0.56		0.56		2.24		2.24		8.96	
ANTI-	DOTE	NO.	-		-		-		-		-	
		RATE	0.03		0.14		0.03		0.14		0.03	
		2	Ö		0				•		•	
	HERB.	NO.	-		1		-		-		-	

5							
10							
,,							
15		TARTARY SOYBEAN BUCKWHEAT W WO W WO			38		
		r soy			07		
20	C	TARTARY SC BUCKWHEAT W WO V	25 50 (50)				
	FECT						
	75 EF	CORN W WO	30 80			0 82	(30)
25	nued) FENIN	69 tc	30	10	6	97 8	65
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W N	100 90	35 35 (0)	20 60 (67)	95 98 70 82 (4) (15)	70 60 65 92
30	2 (. AND				.,	•	7
	able	WHEAT W WO	90 97 (8)	90 92 (3)			
35	T	SORGHUM WHEAT GRAIN W WO W WO					
	NT IN	SOR( GR/	85 95 (11)	60 43			
	PLA						
40	84	RATE	8.96	0.56	0.56	0.56	0.56
			~	_	_	_	0
45		ANTI- DOTE NO.	Ħ	1	=	Ħ	-
		RATE	0.14	0.14	0.14	0.28	0.28
50		Æ	0.	o.	0	0.	
		RB.	1	7	8	8	7

5							
10							
15		XXC	W W0				
20	FECT ( )	TARTARY SO	0A A		_		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	COR	OA		100 100 100 100	Φ,	9
20	Table 2 (continued)		WO W WO 70 85	(18)	100 10	(0)	(0) 2 50 35
30	Table IBITION	WHE?	3	5 95 95	6)		10 43 75 92 (77) (19)
35	PLANT INH	SORGHUPGRAIN	0 <u>%</u> *	95 95	(0)		10 43
40	94		RATE 0.56	0.56	0.56	0.56	2.24
45		ANTI- DOTE	NO.	-	-	н	7
50			RATE 0.56	0.56	1.12	1.12	0.14
50		HERB.	NO.	8	8	6	8

5							
10							
15		SOYBEAN T W WO	65 38			95 77	
20	ecr ( )	TARTARY SOYBEAN BUCKWHEAT W WO W WO					
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO		100 82	95 92		
30	Table 2 (continued)		0 60	100 98	95 60	95 85	08 06 9
	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO					95 95
35	ANT INHI	SORGHUM GRAIN W WO					95 95
40	<b>4</b>	RATE	2.24	2.24	2.24	2.24	2.24
<b>4</b> 5		ANTI- DOTE NO.	п	1		<b>,-</b> 4	H
50		RATE	0.14	0.28	0.28	0.56	0.56
		HERB.	8	8	. 4	7	8

5							
		-					
10							
15		SOYBEAN T W WO			15 38 (61)		
20	ECT ( )	TARTARY SOYBEAN BUCKWHEAT W WO W WO			-		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN W WO	100 100 100 100 (0) (0)	100 100			100 82
30	Table 2 (continued)	PIGWEED CORN REDROOT W WO W W	100 100	55 70 (22)	(100)	75 35	95 98 (4)
•	Table 2 ITION AN	WHEAT W WO				80 92 (14)	
35	NT INHIB	SORGHUM WHEAT GRAIN W WO W W				(42)	
40	% PLAN	RATE	2.24	2.24	8.96	8.96	8.96
45		ANTI- DOTE NO.				<b></b>	1
50		RATE	1.12	1.12	0.14	0.14	0.28
		HERB.	8	7	8	8	8

5							
10							
15		SOYBEAN NT W WO		75 77 (3)			
20	ECT ( )	TARTARY SOYBEAN BUCKWHEAT W WO W WO					
25	ed) NING EFF	CORN	95 92			100 100 100 100 (0)	55 70 100 100 (22) (0)
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W	09 06	15 85 (83)	30 80 (63)	100 100	55 70 (22)
30	Table 2 ITION AN	WHEAT W WO			95 95		
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W			85 95 (11)		
40	94 TI	RATE	8.96	8.96	8.96	8.96	8.96
45		ANTI- DOTE NO.	-	p <del>r</del>		1	п
50		RATE	0.28	0.56	0.56	1.12	1.12
		HERB.	8	8	8	8	2

5								
10								
15		OYE	9 3					
20	TECT ( )		93 33					
25	nued) FENING EF	COR	0 W W0 5 5 10	(50	0	(1	(88)	1/1
30	Table 2 (continued) ITION AND % SAFENIN		WO W WO	(73)	(55)	(37)	(73)	20 55 (64)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SHUM V	3 9 3					
40	% II	ļ	KATE 0.56	0.56	2.24	2.24	8.96	8.96
45		ANTI-DOTE	1	-	~	1	-	1
50		£	2.24	87.7	2.24	87.4	2.24	87.7
		HERB.		ო	ო	က	ო	m

5									
10									
15		TARTARY SOYBEAN	SAT W WO					(100)	10 30 (67)
20	ECT ( )	TARTAR	BUCKWHEAT W WO V						
25	Table 2 (continued)	PIGWEED CORN	YOT Y O		. 001	(0)	80 90 97		73
30	Table 2 (continued)	AT PIGWE	REDROOT WO W WO	95 98 90 95 (4) (6)	100 100	85	80 80	40 70 (43)	75 73
35	Tabl	SORGHUM WHEAT	GRAIN W WO W	95 98 95 9	100 100 100 100 100 100 (0)				
40	% PLANT	e	RATE	0.56	0.56	0.56	0.56	0.56	0.56
		ANTI-	DOTE NO.				1	r	-
45			RATE	0.14	0.56	0.56	1.12	1.12	2.24
50			HERB.	4	4	4	4	4	4

5 10 TARTARY SOYBEAN 15 ş 20 30 (34) 3 15 BUCKWHEAT M WO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş 65 90 80 97 (38) (18) PIGWEED CORN 3 Table 2 (continued) 25 REDROOT M M 100 100 100 100 100 100 80 80 85 80 95 95 90 20 55 73 (15) (25) 9 9 9 100 98 SORGHUM WHEAT 30 ž 9 3 100 98 GRAIN 200 9 35 RATE 2.24 2.24 2.24 2.24 2.24 2.24 40 ANTI-DOTE Š. 45 RATE 0.14 0.56 0.56 1.12 1.12 2.24 HERB. . 9 50 4 7 4 4 4

58

5							
10							
15		SOXBEAN NT W WO					(100)
20	ECT ( )	TARTARY SOYBEAN BUCKWHEAT W WO W WO					
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	.5 95 (0)	5 100 (5)	35 80 20 90 (57) (78)	85 80 90 97 (8)	70 70 (0)
30	Table 2 (continued)	0	90 98 95	100 100 100 100 95 100 (0) (0) (5)	35	80	77
35	Te CANT INHIBIT	SORGHUM WHEAT GRAIN W WO W W	95 98 9	(0)			
40	% PI	RATE	8.96	8.96	8.96	8.96	8.96
45		ANTI- DOTE NO.	г	F	-		1
<b>E</b> 0		RATE	0.14	0.56	0.56	1.12	1.12
50		ERB.	4	4	4	4	4

5 10 95 100 8 100 100 TARTARY SOYBEAN RICE (2) 9 3 ş 20 30 40 28 (34) 15 3 BUCKWHEAT M M % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş (100) 0 75 PIGWEED CORN 3 Table 2 (continued) 0 25 REDROOT ş 35 65 73 9 85 85 80 90 (11) 9 3 80 95 85 30 32 Ş 30 90 95 SORGHUM WHEAT  $\mathbb{S}$ 9 3 7. VO GRAIN 35 RATE 8.96 0.56 0.56 0.56 0.56 0.56 40 ANTI-DOTE NO. 45 RATE 2.24 0.14 0.14 0.14 0.56 0.56 50 HERB. . 90 4 Ŋ S S 2 S

5 95 100 100 100 ş 10 TARTARY SOYBEAN RICE 9 (3) 3 45 50 ş 28 (10) 15 45 3 BUCKWHEAT ο<u>ж</u> % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş PIGWEED CORN 3 Table 2 (continued) S 25 REDROOT OH M 06 06 9 35 80 85 90 90 9 9 9 85 9 32 85 95 3 (11) SORGHUM WHEAT 30 3 40 OM M GRAIN 35 RATE 0.56 2.24 2.24 2.24 2.24 40 ANTI-DOTE . 10 45 0.56 0.14 0.14 0.14 0.56 HERB. 50 S S Ŋ 5 Ŋ

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5							
10		N WO			95 100 (5)		
15		OYBEAN I	80 50		6		5 28 (83)
20	ECT ( )	TARTARY SOBUCKWHEAT					
25	ued) ENING EFF	D CORN F W WO		15 75 (80)		0	
30	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W 6	85 90	65 80 (19)	100 60	25 35 (29)	20 85
<b></b>	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO			25 32 (22)		
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUNG GRAIN W WO					
40	% M	RATE	2.24	2.24	8.96	8.96	8.96
45		ANTI- DOTE NO.	-	~	F	m	F
<i>5</i> 0		RATE	0.56	0.56	0.14	0.14	0.14
		HERB.	Ŋ	ĸ	, <b>v</b> o	'n	'n

5 10 100 100 Ş TARTARY SOYBEAN RICE 9 3 Ş 25 50 (20) 15 3 BUCKWHEAT ş % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 25 3 20 04 65 ş 75 (100) 25 (100) 65 80 (19) SORGHUM WHEAT PIGWEED CORN 3 Table 2 (continued) 0 25 0 REDROOT M MO 65 80 06 06 85 90 65 90 (19) 9 9 85 95 30 95 95 ş 15 45 (67) 95 97 9 3 W W GRAIN (100) 35 60 95 (37) 35 0 40 RATE 8.96 8.96 8.96 0.56 0.56 ANTI-DOTE NO. 7 ~ 45 0.56 0.56 0.56 0.14 RATE 0.03 50 HERB. . 20 S 2 S

5							
10		ICE W WO					
15		OYBEAN F					
20	FECT ( )		20 25 (20)	55 50	15 25 (40)	50 50	
25	nued) FENING EF	PIGWEED CORN REDROOT W WO W WO	5 25 (80)	70 80	15 25 (40)	50 80	
30	(conti		95 65	95 90	85 65	95 90	40 35
	Table 2 (continued) ITION AND % SAFENIN	WHEAT W WO	10 45 95	95 97 (3)	10 45 (78)	(66)	95 92
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	Sorghum Wheat Grain W Wo W W	20 35 (43)	(37)	10 35 1	45 95 <del>(</del>	0 43 9 (100)
40	% Id	RATE	2.24	2.24	8.96	8.96	0.56
45		ANTI- DOTE NO.	7	8	8	8	2
50		RATE	0.03	0.14	0.03	0.14	0.14
		HERB.	-	H	Ħ	r	8

5 10 Ş TARTARY SOYBEAN RICE 3 15 ş 38 (16) 65 77 3 9 BUCKWHEAT **3** % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 94 34 100 100 100 100 100 82 90 92 PIGWEED CORN 3 9 25 Table 2 (continued) REDROOT 9× × 100 98 9 (63) 9 30 80 15 85 (83) 9 75 80 30 SORGHUM WHEAT Ş 95 95 95 95 3 3 Ø. ₩ GRAIN 9 35 RATE 0.56 0.56 0.56 0.56 0.56 0.56 40 ANTI-DOTE . 02 45 RATE 0.28 0.56 0.56 HERB.

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10		N RICE W WO						
15	0	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			40 38			
20	FEECT (	V TARTARY S BUCKWHEAT WO W WO	0					
25	inued)	cor.	70 95 100	5 0	0.0	3 100 82	95 92	
30	Table 2 (continued) ITION AND % SAFENIN	0	95 7	(3) (43)	25 60 (59)	100 98	65 60	95 70 80
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		25 43 90 92 (42) (3)				95 95 95 99 (0) (0)
40	96	RATE	0.56	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	8	N	8	7	8	8
50		RATE	1.12	0.14	0.14	0.28	0.28	0.56
		HERB. No.	8	8	7	7	8	8

5								
10		. 9						
		TICE W						
		<u>ж</u>						
15		SOYBEAN F	77				38 (100)	
		r so eat	95				•	
	$\Box$	TARTARY SOBUCKWHEAT						
20	Į.	TAR1 BUCK						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	WO		0	00			8
	) NG	PIGWEED CORN REDROOT W WO W V		(0) (0)	100 100 (0)			100 82
25	nued FENI	60 C		0 10				
	ntii SAJ	PIGWEED REDROOT W WO	85	(0)	85 70	35 (100)	60 (100)	95 98
	္ပိ မွ		95	001	. 85	0	•	95
30	Table 2 (continued) ITION AND % SAFENIN	AT				(84)		
	<sup>[ab]</sup>	WHE 3				15 92 (84)		
	HIB	SORGHUM WHEAT GRAIN W WO W W				43 1		
35	Zi Li	SORGHUNGRAIN W WO						
	LAN	<b>0</b> 2				0		
	9-6 Dr							
40		RATE	2.24	2.24	2.24	8.96	8.96	8.96
			7	7	7	60	80	∞
		ANTI- DOTE NO.	7	8	8	7	7	7
45		A D						
		RATE	0.56	1.12	1.12	0.14	0.14	0.28
50		2	0	-	-	0	0	0
<i>5.</i> 7		HERB.	7	7	7	7	8	7
		HE				•		- <b>-</b>

5							
10		XICE W WO					
15		OYBEAN I			85 77		
20	FECT ( )				60		
25	inued) \FENING EF	PIGWEED CORN REDROOT W WO W WO	55 60 70 92 (9) (24)		•	(0) (0)	95 100 (5)
30	Table 2 (continued) ITION AND % SAFENIN	0	55 60	95 100 80	0 85 (100)	100 100 (0)	90 70
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		95 95 95 99 (0) (0)			
40	96 tr	RATE	8.96	8.96	8.96	8.96	8.96
<b>45</b>		ANTI- DOTE NO.	8	8	7	8	8
50		RATE	0.28	0.56	0.56	1.12	1.12
		HERB.	8	8	8	84	7

5								
10		ICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
20	FECT ( )							
25	inued) AFENING EF	PIGWEED CORN REDROOT W WO W WO	5 55 10	5 75 40	55 50 10 100)	55 65 40	5 90 10	5 5 40
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	0	(61)	65 55	0 55 (100)	85 5	65 55	70 55
35	Ta ANT INHIBIT	SORGHUM WHEAT GRAIN W WO W W						
40	% PI	RATE	0.56	0.56	2.24	2.24	8.96	8.96
45		ANTI- DOTE NO.	8	7	и .	7	7	8
50		RATE	2.24	4.48	2.24	4.48	2.24	4.48
		HERB.	ო	m	e	ო	က	ю

5								
10								
		¥0						
		RIC						
15		SEAN WO						_
		SOYB ¥			•		7	30
	_	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~					20	35
20	<u> </u>	IARTARY BUCKWHE W WO						
	FECT	TA BU						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	2 · 3			06	2		
25	ed)	PIGWEED CORN REDROOT W WO W W			95 9	95 97 (3)		
	inue AFE	WEED WO	10	0				
	cont % S	PIGWEED REDROOT W WO	95	(0)	(0)	80	70	73
30	2 (c AND	0	95	100	80	85	80	75
	Table 2 (continued) ITION AND % SAFENIN	SORGHUM WHEAT GRAIN W WO W WO	100 98	100 100 100 100 100 100 (0)				
	Tal BITJ	4 WHE	100	00				
35	NHI	SORGHUP GRAIN W WO	86	00 1				
	Į,	SOR GR	100 98	0 100 (0)				
	PLA		-	10				
40	ક્શ	គ						
		RATE	0.56	0.56	0.56	0.56	0.56	0.56
		1	J	0	3	0	0	•
45		ANTI- DOTE NO.	8	7	7	8	8	8
		RATE	0.14	0.56	0.56	1.12	1.12	2.24
50			0	0	0	M	-	7
		HERB.	4	4	4	4	4	4
		里 ~			-	₹	7	4

5 ş 10 TARTARY SOYBEAN RICE 3 ş (29) 15 3 BUCKWHEAT S ş % PLANT INHIBITION AND % SAFENING EFFECT ( ) 3 20 ş 95 97 15 90 (84) PIGWEED CORN (3) 3 Table 2 (continued) 25 REDROOT 3 3 100 100 100 100 95 100 65 80 (19) 75 80 95 98 95 98 100 95 65 70 (2) 3 (8) SORGHUM WHEAT 옻 30 3 9 3 M WO GRAIN (4) 9 35 RATE 2.24 2.24 2.24 2.24 2.24 40 ANTI-DOTE ~ 45 RATE 0.14 0.56 0.56 1.12 1.12 50 HERB. . 8 4 4 4 4

5								
10		WO WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	30					
20	ECT ( )	TARTARY SO BUCKWHEAT W WO V	κ					
25	inued) VFENING EFI	PIGWEED CORN REDROOT W WO W WO			o	20 90 (78)	.75 97 (23)	
30	Table 2 (continued) ITION AND % SAFENIN	0	60 73 (18)	98 95 95	(0)	90 80	70 80 (13)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO		95 98 100 98 (4)	100 100 100 100 100 (0) (0) (0)			
40	<b>₹</b>	RATE	2.24	8.96	8.96	8.96	8.96	
45		ANTI- DOTE NO.	8	8	8	7	N	
50		RATE	2.24	0.14	0.56	0.56	1.12	
		HERB.	4	4	4	4	4	

5								
10		RICE W WO					95 100 (5)	95 100 (5)
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	25 7	0 30 (100)	55 28		6	σ,
20	ECT ( )	TARTARY SC BUCKWHEAT W WO W	W	5	u,			
25	nued) FENING EFF	PIGWEED CORN REDROOT W WO W WO				0		
30	Table 2 (continued) ITION AND % SAFENIN	0	75 70	60 73 (18)	55 85 (36)	60 35	80 60	85 90
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W					15 32 (54)	95 95
40	% PLANT	SO G RATE W	8.96	8.96	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO. R	2 8.	2 8.	2 0.	2 0.	2 0.	2 0.
50		RATE	1.12	2.24	0.14	0.14	0.14	0.56
<b>5</b> ₩		HERB.	4	4	S	'n	S.	S

5								
10		RICE W WO					90 100	100 100 (0)
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	09 09			40 28	6	10
20	ect ( )	TARTARY SO BUCKWHEAT W WO V	·			4		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO		0 75 (100)	0			
30	Table 2 (continued)	0	85 90	75 80	60 35	60 85	85 60	95 90
	Table HIBITION	м мне <i>л</i> М					15 32 (54)	90 95
35	PLANT IN	SORGHU GRAIN W WO						
40	3-8	RATE	0.56	0.56	2.24	2.24	2.24	2.24
45		ANTI-DOTE NO.	. 4	8	7	84 .	7	8
50		RATE	0.56	0.56	0.14	0.14	0.14	0.56
		HERB.	in	Ŋ	w .	S	ស	S

5 10 ş 95 100 TARTARY SOYBEAN RICE (2) 3 Ş (40) 28 30 50 15 3 40 BUCKWHEAT M WO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 M WO (100) 75 PIGWEED CORN Table 2 (continued) 0 0 25 REDROOT M WO 100 80 06 06 (54) 35 35 65 85 30 32 70 60 9 9 8 SORGHUM WHEAT 30 3 3 GRAIN M WO 35 RATE 2.24 2.24 8.96 8.96 8.96 40 ANTI-DOTE М М 8 8 7 8 2 45 RATE 0.56 0.56 0.14 50 HERB. 80. Ŋ Ŋ S S

5 10 Ş 100 100 TARTARY SOYBEAN RICE 9 3 Ş 15 45 50 (10) 38 3 20 BUCKWHEAT 04 M % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş (67) 25 75 PIGWEED CORN 3 Table 2 (continued) 25 REDROOT 70 80 06 06 90 90 9 (13)35 (23) 9 25 20 30 SORGHUM WHEAT 3 85 95 (11) 85 92 3 M W GRAIN 43 35 9 40 RATE 8.96 8.96 8.96 0.56 0.56 ANTI-DOTE NO. 7 Ņ 7 ന ന 45 RATE 0.56 0.56 0.56 0.14 0.14 50 HERB. М В

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10		034					
		UCE W V					
		EAN F					
15		OYBE V W			77 07 (10)		
		S. TA			70		
20	$\mathcal{C}$	ARTARY UCKWHE W WO					
	FECT						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	R.N WO	82	92			95 100 100 100 (5)
25	ned)	COR T	95	90 92 (3)			100 C
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W W	98	09	85 (100)	80	100
	ردەت 2 %	PIGW REDR W	95 99	82	Ü	85	95 1(
30	2 Z	AT WO				ю	
	rabl ITIO	WHEA				95 99	
35	HIB	SORGHUM WHEAT GRAIN W WO W WC				ın	
33	# E	SOR( GR/				95 99	
	PLAN					5	
40	8-6	吕	9	vo.	<b>v</b> 9	vo.	S
		RATE	0.56	0.56	0.56	0.56	0.56
		Н ы .	_				_
45		ANTI- DOTE NO.	М	ന	n	n	m
		題	28	0.28	26	26	1.12
		RATE	0.28		0.56	0.56	<del>.</del>
50		HERB.	7		8	8	7
		HEI	• •	••		••	

5								
40								
10		RICE W WO						
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
15		BEAN			38			77
		SOY.			5 38 (87)			2 06
	0	TARTARY SI BUCKWHEAT W WO						65
20	ECT	TAR						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN W WO	100			82	92	
25	ued) ENIN(	o COi	100 1(0)			100 82	95	
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W V	80 70 100 100	35	(65)			85
30	(Co		80	35 35 (0)	25 (5	95 98	70 60	85 8 (0)
30	le 2	HEAT W WO		(73)				
	Tat (BIT)	E A		23				
35	INH	SORGHUM WHEAT GRAIN W WO W W		43 (100)				
	LANT	S C Z		•				
40	<u>م</u> عو	យ						
		RATE	0.56	2.24	2.24	2.24	2.24	2.24
		<u> </u>				•	7	74
45		ANTI- DOTE NO.	m	n	n	က	က	က
		RATE	1.12	0.14	0.14	28	88	99
50		RA	<del>i</del>		o.	0.28	0.28	0.56
		HERB.	7	8	7	7	7	7
		<b>R</b> 7						

5							
10		RICE W WO					
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					86 04
20	ECT ( )						7
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO		95 100 100 100 (5) (0)	100 100 (0)		
30	Table 2 (continued)		08 06	95 100 (5)	90 70	65 35	0 60 (100)
	Table 2	SORGHUM WHEAT GRAIN W WO W WO	95 95			85 92	
35	LANT INHI	SORGHUNG GRAIN	95 95		·	10 43 (77)	
40	<b>%</b>	RATE	2.24	2.24	2.24	8.96	8.96
45		ANTI- DOTE NO.	m	m	m	m	en
50		RATE	0.56	1.12	1.12	0.14	0.14
		HERB.	7	8	8	7	6

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			60 77 (23)			
20	FFECT ( )							_
25	inued) AFENING E	PIGWEED CORN REDROOT W WO W WO	90 82	(19)			100 100 100 100 (0)	95 100 (5)
30	Table 2 (continued)	0	100 98	70 60	95 85	(7) (7)	100 100	90 70
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W				70 95 95 (27)		
40	સ્થ	RATE	8.96	8.96	8.96	8.96	8.96	8.96
45		ANTI- DOTE NO.	က	m	ო	ო	၈	က
5u		RATE	0.28	0.28	0.56	0.56	1.12	1.12
		HERB.	8	8	7	8	8	8

5 ş 10 TARTARY SOYBEAN RICE 3 ş 15 3 BUCKWHEAT Q. Δ. % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş 10 80 10 55 10 10 55 15 40 (20) 55 10 40 (75) (63) PIGWEED CORN 9 3 Table 2 (continued) S REDROOT 25 M KO 55 (28) 40 55 75 80 80 85 SORGHUM WHEAT ş 30 3 GRAIN W WO 35 RATE 0.56 0.56 2.24 2.24 8.96 40 ANTI-DOTE XO. ന 45 4.48 2.24 RATE 2.24 4.48 2.24 HERB. 50 . 90 ო ო ന ო ന

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10		V WO					
15		SOYBEAN RE					
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					
25	nued) FENING EFF	PIGWEED CORN REDROOT W WO W WO	90 40		0	55 90 (39)	95 97 (3)
30	Table 2 (continued)	0	45 55 (19)	98 95 95 (4)	100 100 100 100 95 100 (0) (0) (5)	90 80	70 80 (13)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		100 98 95	100 100 100		
40	<b>%</b>	RATE	8.96	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	ო	ო ·	ო	m	๓
50		RATE	4.48	0.14	0.56	0.56	1.12
		ERB.	e	4	4	4	4

5									
10			RICE	W WO					
15			TARTARY SOYBEAN RICE BUCKWHEAT	3	1 57	15 30 (50)			
20		FFECT ( )	TARTARY SOBUCKWHEAT	WO W					
25	ntinued)	% PLANT INHIBITION AND ½ SAFENING EFFECT ( )	PIGWEED CORN REDROOT	M M OM M	(15)	73	100 95	80 70 90	100
30	Table 2 (continued)	TION AND %		A WO	09	80	90 98 100 (9)	<b>8</b>	100 100 100 100 95 100 (0) (0) (5)
35	•	LANT INHIB	SORGHUM WHEAT GRAIN	<b>3</b>			100 98		100 100
40		9-6 EH		RATE	0.56	0.56	2.24	2.24	2.24
45			ANTI-DOTE	NO.	ო	က	က	ო	ო
				RATE	1.12	2.24	0.14	0.56	0.56
50			HERB.	NO.	4	4	4	4	7

5 ş 10 TARTARY SOYBEAN RICE 3 Ş 30 (100) 15 3 BUCKWHEAT 15 0 M WO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş 95 97 (34) 06 09 PIGWEED CORN (3) 3 Table 2 (continued) 25 REDROOT M M 80 60 73 80 55 70 (22) (18) 95 98 100 98 100 95 90 90 Ş SORGHUM WHEAT 30 3 M WO GRAIN 3 35 RATE 2.24 2.24 2.24 8.96 8.96 40 ANTI-DOTE М М က က ന ന 45 1.12 RATE 1.12 2.24 0.14 0.56 50 HERB. . 0 4 4 4 4

5 8 ·10 TARTARY SOYBEAN RICE 3 Z 30 **78** 15 3 35 45 20 BUCKWHEAT οχ Λ % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş 90 97 PIGWEED CORN 8 3 Table 2 (continued) 0 25 REDROOT ş 100 100 100 100 100 100 80 20 73 35 (23) 35 85 9 3 90 90 9 75 SORGHUM WHEAT 30 9 3 M M GRAIN 9 35 RATE 8.96 8.96 0.56 0.56 8.96 8.96 40 ANTI-DOTE NO. m 45 0.14 2.24 0.14 RATE 0.56 1.12 50 М Ю 4 4 S S 4 . 4

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10		OYBEAN RICE		95 100 (5)		100 100 (0)	40 50 (20)		95 100 (5)
20	FECT (	TARTARY SOBUCKWHEAT	3						
25	:inued) SAFENING EF	PIGWEED CORN REDROOT	M W		80 75 75	90	06	2 0	0 0
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )		M 0M M	32 80 (100)	75 8 (7)	95 95 85 96 (6) (6)	95 9	70 35	30 32 50 60 (7) (17)
35	1 PLANT INHIBI		03 3	0		.6			ო <sub>.</sub>
40	<b>≯</b> €		RATE	0.56	0.56	0.56	0.56	2.24	2.24
45		ANTI- DOTE	NO.	ო	m	၈	m	၈	ო
50			RATE	0.14	0.56	0.56	0.56	0.14	0.14
		HERB.	NO.	'n	Ŋ	ιΛ	ហ	S	ις

5 10 (100) ş 0 100 TARTARY SOYBEAN RICE 3 ₹ 28 28 (20) 15 40 50 W WO W 9 9 BUCKWHEAT % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş (54) 35 75 PIGWEED CORN 3 Table 2 (continued) 25 REDROOT **3** 75 80 60 85 50 85 (30) (42) 85 90 80 90 (12) 3 (9) 30 SORGHUM WHEAT ş 75 95 (22) 3 GRAIN 9x x 35 40 RATE 8.96 2.24 2.24 2.24 2.24 ANTI-DOTE NO. ო ന e က ന 45 0.14 0.56 0.56 0.56 0.14 RATE 50 HERB. ЖО. Ŋ ŝ S \$ S

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10		TARTARY SOYBEAN RICE BUCKWHEAT	W W W		85 100 (15)		100 100 (0)	30 50 (40)	
20	FFECT ( )	TARTARY SO	0M M		·			ĕ	15 25 (40)
25	tinued) SAFENING ER	PIGWEED CORN REDROOT	W WO W WO	35 0	09	80 50 75	<b>0</b> _	9	5 30 25
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )		w w	70	50 32 65 (	80 8 (0)	(0) (9)	(0)	45 95 65 (100)
35	T ANT INHIB]	SORGHUM WHEAT GRAIN	w wo		ις.		O)		5 35 0 (86)
40	74 %		RATE	8.96	8.96	8.96	8.96	8.96	0.56
45		ANTI- DOTE	NO.	ო	၈	ო	ო .	ო	4
50			RATE	0.14	0.14	0.56	0.56	0.56	0.03
		HERB.	NO.	S	so.	in .	ю	ഗ	-

5 10 Ş TARTARY SOYBEAN RICE 3 S. 15 3 BUCKWHEAT ş % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 20 (09) 22 (09) (40) 50 25 25 9 20 3 30 20 10 20 ş 80 15 80 15 25 (40) 30 80 (63) 25 (82) PIGWEED CORN 3 75 Table 2 (continued) 25 45 REDROOT Ø3 34 90 65 80 97 100 90 100 90 65 95 85 82 30 (100) (100) 45 85 97 (13)45 (18) SORGHUM WHEAT 97 (3) 3 92 0 0 GRAIN M W (100) 95 35 95 (92) 75 95 (22) 10 35 35 9 95 0 S 40 RATE 8.96 8.96 2.24 2.24 0.56 DOTE NO. 4 4 4 4 7 45 0.14 0.03 0.14 0.03 0.14 RATE 50 HERB. NO.

5 10 Ş TARTARY SOYBEAN RICE 3 ş 15 38 77 3 85 BUCKWHEAT 65 Ş % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 3 ş 92 95 98 100 82 PIGWEED CORN 3 Table 2 (continued) 25 92 REDROOT M MO 9 50 85 9 35 (42) 80 80 80 82 95 30 ş 95 95 92 SORGHUM WHEAT 9 3 95 ¥ 80 GRAIN 43 90 95 35 9 95 40 RATE 0.56 0.56 0.56 0.56 0.56 0.56 ANTI-DOTE М В 4 4 4 4 4 4 45 0.14 0.14 0.28 0.28 0.56 0.56 RATE 50 HERB. . 20 ~ 8 ~ 8 ~

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				55 38		
20	FECT ( )		0	0				
25	rening ex	PIGWEED CORN REDROOT W WO W WO	100 100 100 100 (0)	100 100			95 82	100 92
	Table 2 (continued) ITION AND % SAFENIN	0	100 100	80 70	10 35 (72)	100 60	95 98	75 60
30	Table	SORGHUM WHEAT GRAIN W WO W WO			70 92 (24)			
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUR GRAIN W WO			30 43			
40	34	RATE	0.56	0.56	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	4	4	4	4	4	4
		RATE	1.12	1.12	0.14	0.14	0.28	0.28
50		HERB.	ч	8	8	7	8	7

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<b>10</b>		N RICE W WO						
15	•	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	95 77					45 38
20	EFFECT (	Ş			100	100		
25	Table 2 (continued) TTION AND % SAFENING	PIGWEED CORN REDROOT W WO W V	85	80	95 100 100 100 (5) (0)	) 70 95 100 (43) (5)	35	(84)
30	2 (Co AND %		95	06	95	40 70 (43)	85	10 60 (84)
30	Table IBITION	SORGHUM WHEAT GRAIN W WO W WO		95 95			90 92 (3)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUN GRAIN W WO		95 95			45 43	
40	*	RATE	2.24	2.24	2.24	2.24	8.96	8.96
<b>4</b> 5		ANTI- DOTE	4	4	4	4	4	4
		RATE	0.56	0.56	1.12	1.12	0.14	0.14
50		HERB.	7	8	8	7	8	8

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10		ω S					
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					
		EAN			4		
15		SOYBI			11		
		T S EAT			06		
	C	TARTARY SOBUCKWHEAT  W WO					
20	ECT	TAF BUC W					
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	- 0x	23	92			95 100 100 100 (5)
	ENG	PIGWEED CORN REDROOT W WO W	100 82				00 (0)
25	nue FEN.	9 50		85		80	00
	nti , SA	PIGWEED REDROOT W WO	86	09	85 (0)		5 1
	ပို့ နို့		95	70	85	95	66
30	Table 2 (continued)	AT W0				95	
	abl	WHE/				95	
	T	SORGHUM WHEAT GRAIN W WO W W				95	
35	INI	SORGHUP GRAIN W WO				95 (0)	
	AMT	Ŋ,				6	
	14 9						
40	•	RATE	8.96	8.96	8.96	8.96	8.96
		×	∞.	œ́	∞	ω,	80
		. E :	4	4	4	4	4
45		ANTI- DOTE NO.	•	•		·	,
		គ្ន	<b>∞</b>	<b>60</b>	9	9	2
		RATE	0.28	0.28	0.56	0.56	1.12
50		•					
		HERB.	7	8	8	7	8
		<b>24</b>					

5								
10			2					
			<b>2</b>					
		RI	<b>≩</b>					
15		EAN.	⊋					
		DXO :	3					
	~	TARTARY SO BUCKWHEAT	5					
20	<u> </u>	RTA	⊋ <b>3</b>					
	ECT	AT UM :						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	·=	60 70 100 100	10	07	0	07	10
25	d) Ing	: COR	<b>*</b> 00	9		10 10 (0)		
	nue FEN	PIGWEED CORN REDROOT	§ 6	(15) ( 15 55 40	55		55	45
	nti SA	PIGWEED REDROOT	× × ×	(15)	(73)	(55) 10 55 (82)	55	55
30	Table 2 (continued) ITION AND % SAFENIN	IT EF	<b>*</b> 09	) 15	25	91	60 55	55 55 (0)
••	8 6 8 7	AT	<b>≩</b>					
	abl TIO	ME :	<b>≯</b>					
25	T	SORGHUM WHEAT GRAIN	2					
35	Ŕ	SORGHUP GRAIN	<b>⊋</b> ≥					
	ANT	8 .	•					
	M							
40	84	E	8.96	•	•	<b>.</b>	<b>.</b>	vo
		å	≨ ∞	0.56	0.56	2.24	2.24	8.96
		4						•
45		ANTI- DOTE	7	4	4	4	4	4
		Ę.	1.12	2.24	4.48	2.24	4.48	2.24
50		۶	4 -	7	4	8	4	7
		HERB.	2 2	ო	ന		-	
		題	ž "	(1)	(1)	m	(C)	က

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10		RICE W WO	•				
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					
20	ECT ( )	TARTARY SOBUCKWHEAT					,
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	25 55 75 40 (55)	95 95	(0)	80 80 75 90 (0) (17)	85 80 85 97 (13)
30	fable 2 ( TION AND	0	7	100 98 9	100 100 100 100 100 100 (0)	₩	ω.
35	T PLANT INHIB	SORGHUM WHEAT GRAIN W WO W W		95 98 (4)	100 100 (0)		
40	<b>≯</b> €	RATE	8.96	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	4	4	4	4	4
<i>50</i>		RATE	87.7	0.14	0.56	0.56	1.12
		HERB.	ო	4	4	4	4

5							
10		RICE W WO					
15		SOYBEAN T W WO	15 7	25 30 (17)			
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		8			
25	ied) NING EFF	CORN W WO					65 90 (28)
20	Table 2 (continued)	PIGWEED CORN REDROOT W W W W	65 70 (8)	35 73 (53)	95 95 (0)	95 100	80 80
30	Table 2 ITION AN	WHEAT W WO			95 98	(0)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO			95 98 (4)	100 100 100 100 95 100 (0) (0) (5)	
40	26	RATE	0.56	0.56	2.24	2.24	2.24
45		ANTI- DOTE NO.	4	4	4	4	4
		RATE	1.12	2.24	0.14	0.56	0.56
50		HERB.	4	4	4	4	4

5 10 ş TARTARY SOYBEAN RICE 3 Ş (100) 20 30 (34) 15 3 BUCKWHEAT **%** % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 2 2 (100) 90 (13) 50 80 85 97 PIGWEED CORN Table 2 (continued) 0 25 REDROOT M W (11) 8 (38) 70 65 73 95 95 9 75 85 SORGHUM WHEAT 3 86 06 30 6) 3 GRAIN M WO 95 98 ઉ 35 RATE 8.96 2.24 2.24 2.24 8.96 40 ANTI-DOTE М М 4 4 45 2.24 0.14 0.56 RATE 1.12 1.12

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HERB.

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5								
10		NCE W WO						80 100 (20)
15		OYBEAN F	}		25 7	60 30		80
20	FECT ( )				N	9		
25	nued) FENING EF]	PIGWEED CORN REDROOT W WO W WO	:	65 97 (33)			ۍ.	
30	Table 2 (continued) ITION AND % SAFENIN		0 95 100	08 06	65 70 (8)	65 73	50 35	10 60 (84)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO	91					35 32
40	% PLA	RATE		8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE NO.		4	4	4	7	4
50		RATE	0.56	1.12	1.12	2.24	0.14	0.14
		HERB.	4	4	4	4	'n	ហ

5 8 95 100 100 100 10 3 TARTARY SOYBEAN RICE 3 Ø. 3 50 40 28 15 80 BUCKWHEAT M WO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş (100) 0 75 PIGWEED CORN 3 Table 2 (continued) 0 25 REDROOT γ γ 70 80 (13) 35 55 85 (36) (12) 75 90 (17) 30 32 15 60 (75) 80 90 65 SORGHUM WHEAT M W 80 95 (16) 30 3 9X X GRAIN 35 RATE 0.56 0.56 2.24 0.56 2.24 0.56 40 ANTI-DOTE NO. 7 4 45 0.14 0.14 0.56 0.56 RATE 0.14 0.56 . HERB. 50 Ŋ Ŋ S 2 S

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10 8 100 100 95 100 TARTARY SOYBEAN RICE 3 15 8 28 35 50 (30) 3 40 BUCKWHEAT 옻 % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 3 ş 75 (100) PIGWEED CORN **>** Table 2 (continued) 25 0 0 REDROOT Ø. ₹ 70 85 65 80 80 90 (18) (19) 35 85 90 8 20 85 30 ş SORGHUM WHEAT 85 95 32 (11) 3 45 GRAIN **9**€ 35 40 RATE 2.24 2.24 2.24 2.24 8.96 ANTI-DOTE NO. 4 45 4 4 RATE 0.14 0.56 0.56 0.56 0.14 j. 14 50 HERB. . 9

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10		VICE W WO			95 100 (5)			
15		OYBEAN F	60 28		95	35 50 (30)		90 38
20	rect ( )		Ψ			••		<b>.</b>
25	aued) FENING EFF	PIGWEED CORN REDROOT W WO W WO		10 75 (87)				
30	Table 2 (continued)	0	65 85 (24)	65 80 (19)	85 90	80 90 (12)	90 35	95 60
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO			70 95 (72)		25 43 95 92 (42)	
40	1d %	w						
		RATE	8.96	8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE NO.	4	4	4	4	'n	v
50		RATE	0.14	0.56	0.56	0.56	0.14	0.14
		HERB.	'n	ហ	ហ	ν	8	8

10		RICE	M WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT	M W				77 07 (10)		
20	ECT ( )	TARTARY SO	W W				•		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	WO W WO	95 92	25 82 (70)			95 100 (5)	100 100 100 100 (0) (0)
30	Table 2 (continued) ITION AND % SAFENIN		WO W W	75 60	100 98	85 80	80 85	70 70	100 100
	Table HIBITION	SORGHUM WHEAT GRAIN	WO W			5 95 95			
35	PLANT IN	SORGHUPGRAIN	>			95 95			
40	<b>№</b>		RATE	0.56	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE	NO.	2	ស	Ŋ	Ŋ	'n	တ
			RATE	0.28	0.28	0.56	0.56	1.12	1.12
50		ERB.	NO.	2	8	7	8	8	81

5 ş 10 TARTARY SOYBEAN RICE 3 8 11 20 38 (48) 15 3 80 BUCKWHEAT 0A A % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Q4 ∡ 92 82 PIGWEED CORN Table 2 (continued) 95 95 25 REDROOT A VO (100) 09 0 100 98 9 80 85 (15) 30 35 90 95 85 SORGHUM WHEAT 15 43 60 92 95 95 (35) 30 9 3 W W GRAIN (99) 90 95 9 35 RATE 2.24 2.24 2.24 2.24 2.24 2.24 40 ANTI-DOTE . 80 3 S S S 45 0.56 0.56 0.14 0.14 0.28 0.28 50

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10		lice	м м						
15		OYBEAN F	9 3				80 38		
20	ECT ( )	TARTARY SOBUCKWHEAT	M M				80		
25	aued) FENING EFI	COR	ON A ON A	(0)	100 70 100 100 (0)			100 82	80 92 (14)
30	Table 2 (continued) ITION AND % SAFENIN			(0)	100 70	55 35	55 60	100 98	95 60
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	MHE.	W WO W WO			60 43 85 92			
40	% PI		RATE	† <del>7</del>	2.24	8.96	8.96	8.96	8.96
45		ANTI- DOTE	NO.	า	ις	ะว	ιΩ	ហ	'n
50		,	RATE	71.1	1.12	0.14	0.14	0.28	0.28
		HERB.	NO.	4	2	<b>8</b>	8	7	7

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10		IICE W WO						
15		OYBEAN F		85 77				
20	FECT ( )			~				
25	nued) FENING EFI	PIGWEED CORN REDROOT W WO W WO			100 100 100 (0) (0)	70 100 100 (0)	5 10 (50)	10 40 (75)
30	Table 2 (continued)	-	90 80	25 85 (71)	100 10	95 70	20 55 (64)	40 55 (28)
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W	95 95 95 5) (0)					
35	, PLANT IN	SOR( GRA	80 95					
40	•	RATE	8.96	8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE NO.	Ŋ	Ŋ	in.	Ŋ	Ŋ	'n
		RATE	0.56	0.56	1.12	1.12	2.24	4.48
50		HERB.	. 74	7	И	8	ო	က

10		ICE W WO					
15		OYBEAN R					
20	FECT ( )						
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	15 10	15 40	30 10	10 40 (75)	
	Table 2 (continued)	0	50 55 (10)	25 55 (55)	55 55 (0)	90 55	95 95
30	Table	S WHEA					(4)
35	PLANT INH	SORGHUP GRAIN W WO					100 98
40	94 m	RATE	2.24	2.24	8.96	8.96	0.56
45		ANTI- DOTE NO.	5C	'n	ស	ĸ	vı
		RATE	2.24	4.48	2.24	4.48	0.14
50		HERB.	က	n	м	m	4

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				50 7	40 30	
20	EFFECT ( )	Ş			4			
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W V	00 100	06 09 08 08 08 09 08 09 08 09 08 09 08 09 08 09 08 09 09 09 09 09 09 09 09 09 09 09 09 09	95 80 95 97 (3)	60 70 (15)	55 73 (25)	100 95
30	fable 2 ( TTION AND	•	100 100 100 100 100 (0) (0) (0)	<b>6</b> 0	6	•	u	100 98 1
35	1 PLANT INHIB]	SORGHUM WHEAT GRAIN W WO W WC	100 100 1					100 98
40	*	RATE	0.56	0.56	0.56	0.56	0.56	2.24
45		ANTI- DOTE NO.	<b>v</b>	ស	'n	ស	'n	တ
		RATE	0.56	0.56	1.12	1.12	2.24	0.14
50		HERB.	4	4	4	4	4	4

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				(100)	85 30	
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	9.		90	97	0	80	
25	Table 2 (continued) ITION AND % SAFENING	PIGWEED CORN REDROOT W WO W (	5 100	80 80 15 90 (0) (84)	80 90	07 07 (0)	80 73	100 95
30	Table 2 (	I WHEAT  W WO	100 100 100 95 (0) (0) (5	8	85	22	98	
35	LANT INHII	SORGHUR GRAIN W WO	100 100 (0)					95 98 90 98 (4) (9)
40	<b>₹</b>	RATE	2.24	2.24	2.24	2.24	2.24	8.96
45		ANTI-DOTE	ស	ĸ	'n	'n	S	S
		RATE	0.56	0.56	1.12	1.12	2.24	0.14
50		HERB.	4	4	4	4	4	7

5								
10		8						
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
15		SEAN WO				7 (100)	30	28
,,		SOYB T				0 7 (100	95	20 28 (29)
	^	TARTARY SO BUCKWHEAT W WO 1				J	O,	
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	TART BUCK W						
	BFFE	<u> </u>		0 G	97			
25	ed)	CORN W WO		15 90 (84)	30 97 (70)			
20	ciaue SAFE	PIGWEED CORN REDROOT W WO W	100	80	80	70	73	(18)
	(con	PIG RED	100 1(	06	95	75	100 73	6 C
30	Table 2 (continued)	HEAT W WO	100 100 100 100 100 100 (0)					
	Tabl ITIO	AHA A	100	••				
35	MHIB	SORGHUM WHEAT GRAIN W WO W W	0 100					
	I TA	SOR GR	100					
	AIA 9							
40	•	RATE	8.96	8.96	8.96	8.96	8.96	0.56
			∞	∞	∞	<b>&amp;</b>	₩.	•
45		ANTI-DOTE	Ŋ	2	Ŋ	'n	S	'n
			9	99	12	12	54	0.14
		RATE	0.56	0.56	1.12	1.12	2.24	
50		HERB.	4	4	4	4	4	'n
		HE	7		-			

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Z 95 100 10 100 100 TARTARY SOYBEAN RICE (2) 9 3 ş 20 28 15 65 80 BUCKWHEAT M 40 % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 3 55 75 (27) PIGWEED CORN 3 Table 2 (continued) 0 25 REDROOT Ş 35 40 60 (34) 60 80 80 90 (12) 90 90 (25) 85 9 3 45 90 Ş SORGHUM WHEAT 25 32 (22)95 95 30 9 3 W WO GRAIN 35 RATE 0.56 0.56 0.56 0.56 0.56 2.24 40 ANTI-DOTE S S Ŋ Ŋ 45 RATE 0.14 0.14 0.56 0.56 0.56 0.14 HERB. 50 S 5 S S S S

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ş 100 100 10 65 100 (32) 9 TARTARY SOYBEAN RICE 3 Ş 28 (30) 35 50 15 3 55 BUCKWHEAT **9** % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 **9 №** (100) PIGWEED CORN Table 2 (continued) 0 0 25 REDROOT 34 34 (100) 35 70 80 90 09 0 (13) 65 85 (54) 06 06 9 92 65 SORGHUM WHEAT % ≯ 32 80 95 (16) 30 40 W WO GRAIN 35 RATE 8.96 2.24 2.24 2.24 2.24 2.24 40 ANTI-DOTE NO. Z S ស S 45 0.14 0.56 0.14 0.14 0.56 0.56 RATE 50 HERB. 'n S S S S 'n

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10 ·		EAN RICE WO W WO	95 100 (5)		0		100 100	
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			65 50			25 25 (0)
25	Table 2 (continued) ITION AND % SAFENING EFF	PIGWEED CORN REDROOT W WO W WO	09	35 0	06	80 0 75 (13) (100)	06	65 0 25 (100)
30	2 (c	0	2 95	75	95	% C)	5 95	5 95
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W	20 32 (38)				55 95	0 35 80 45 (100)
40	<b>&gt;</b> e	RATE	8.96	8.96	8.96	8.96	8.96	0.56
45		ANTI-DOTE	ĸ	ĸ	vo	ю	រក	9
50		RATE	0.14	0.14	0.56	0.56	0.56	0.03
		HERB.	'n	ស	'n	. ហ	'n	F

5 10 ş TARTARY SOYBEAN RICE 3 Ş 15 3 BUCKWHEAT Ş % PLANT INHIBITION AND % SAFENING EFFECT ( ) (100) 20 (30) 50 25 50 (10) 25 3 20 45 35 40 9 0 Ş 25 80 80 80 80 (69) 10 25 (09) (80) 9 PIGWEED CORN 25 3 90 Table 2 (continued) S 25 REDROOT ş 90 06 001 26 001 65 90 65 3 92 95 95 95 45 30 2 (100) 45 SORGHUM WHEAT 97 90 97 (8) 8 3 90 65 0 GRAIN (100) 75 95 % ₩ 35 (100) 35 95 70 95 (22) (82) (27) 35 15 0 0 RATE 40 8.96 2.24 8.96 0.56 2.24 ANTI-DOTE . 02 9 9 9 9 9 45 0.03 0.14 0.03 0.14 RATE 0.14 50 HERB. М В -~ \_

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10		RICE W WO						
15		SOYBEAN T W WO		30 38 (22)				77
20	HFECT. ( )	I TARTARY SOYBEAN RICE BUCKWHEAT WO W WO W WO W		m				95
25	ontinued) g SAFENING E	PIGWEED CORN REDROOT W WO W W	10 35 (72)	60 (100)	100 98 90 82	70 60 95 92	80	85 (30)
30	Table 2 (continued)	0	80 92 10	0	100	70	95 90	60 85
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT.()	SORGHUM WHEAT GRAIN W WO W W	5 43 80 (89)				95 95 95	
40	કર	RATE	0.56	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	9	9	9	9	9	9
		RATE	0.14	0.14	0.28	0.28	0.56	0.56
50		ERB.	8	8	8	7	8	7

5									
10		RICE	0M M						
15		SOYBEAN	M M9				65 38		
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWIEAT	0 <b>%</b>				ý		
25	ued) ENING EFF	D CORN F	M M	(0) (0)	100 100 (0)			75 82 (9)	95 92
	contin	PIGWEED CORN REDROOT	M M	00 100	85 70	80 35	65 60	100 98	75 60
30	Table 2 (continued) HIION AND % SAFENIN		N WO		∞	85 92 8 (8)	9	1	7
35	Table 2 (continued)	SORGHUM WHEAT GRAIN	M WO			20 43 (54)			
40	<b>≯€</b>		RATE	0.56	0.56	2.24	2.24	2.24	2.24
45		ANTI- DOTE	NO.	•	9	9	9	9	9
			RATE	1.12	1.12	0.14	0.14	0.28	0.28
50		HERB.	NO.	74	8	7	7	8	7

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		77 06				20 38 (48)
20	ECT ( )	TARTARY SOUCKWHEAT		•				.,
25	ued) ENING EFF	D CORN T W WO			100 100 100 100 (0)	100 100 (0)		
	Table 2 (continued)	REDROOT  W WO W	90 80	95 85	100 100 (0)	70 70 (0)	70 35	50 60 (17)
30	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO	95 95				65 92 (30)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM GRAIN W WO	60 95				40 43	
40	96	RATE	2.24	2.24	2.24	2.24	8.96	8.96
45		ANTI- DOTE NO.	9	9	9	9	<b>.</b>	9
		RATE	0.56	0.56	1.12	1.12	0.14	0.14
50		HERB.	8	81	8	N	81	2

5 **₹** 10 TARTARY SOYBEAN RICE M MO M MO 70 77 (10) 15 BUCKWHEAT % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 100 100 100 100 90 70 100 100 ¥ ¥ 82 60 100 92 9 PIGWEED CORN 9 100 98 95 Table 2 (continued) REDROOT 25 OM M 65 85 (54) 80 80 9 9 85 SORGHUM WHEAT OM M 95 95 30 <u>e</u> GRAIN Ω 3 80 95 (16) 35 RATE 8.96 8.96 8.96 8.96 8.96 8.96 40 ANTI-DOTE М . 9 9 9 9 9 9 45 1.12 0.56 1.12 0.56 RATE 0.28 0.28 50 HERB. М М ~ ~ 8 8 7 ~

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10			RICE	OM M					
15			TARTARY SOYBEAN RICE BUCKWHEAT	M WO					
20		FECT ( )	TARTARY SOBUCKWHEAT						
25	ned)	% PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	OM M	40 10	90 40	35 10	55 40	50 10
	Table 2 (continued)	and % sai		0M M 0	25 55 (55)	50 55 (10)	20 55 (64)	25 55 (55)	45 55 , (19)
30	Table	IBITION A	SORGHUM WHEAT GRAIN	0A A					
35		LANT INH	SORGHUPGRAIN	W WO					
40		94 Di		RATE	0.56	0.56	2.24	2.24	8.96
45			ANTI- DOTE	NO.	9	9	9	9	9
				RATE	2.24	4.48	2.24	4.48	2.24
50			HERB.	NO.	၈	ო	æ	m	m

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10		RICE W WO					
15	C	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					
20	EFFECT	g	07			90	97 3)
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W V	30 55 80 ,	95 95	100 100	30 80 25 90 (63) (73)	80 80 85 97 (0) (13)
30	Table 2 ITION AN	SORGHUM WHEAT GRAIN W WO W WO		95 98 (4)	100 100 100 100 100 (0) (0) (0)		
35	PLANT INHIB	SORGHUM GRAIN W WO		95 98 (4)	100 100		
40	şe	RATE	8.96	0.56	0.56	0.56	0.56
		ANTI- DOTE NO.	9	v	9	9	•
45		RATE	87.4	0.14	0.56	0.56	1.12
50		HERB.	က	4	4	4	4

5					-		
10		RICE W WO					
15		SOYBEAN I W WO	7 0	30 (17)			
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	20	. 25			
25	aued) FENING EFI	PIGWEED CORN REDROOT W WO W WO					75 90
	Table 2 (continued)	•	60 70 (15)	75 73	95 95	(0)	85 80
30	Table 3	SORGHUM WHEAT GRAIN W WO W WO			95 98	100 100	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUNG GRAIN			100 98	100 100 100 100 100 100 (0) (0) (0)	
40	64 84	RATE	0.56	0.56	2.24	2.24	2.24
45		ANTI- DOTE NO.	9	vo	9	9	9
		RATE	1.12	2.24	0.14	0.56	0.56
50		HERB.	4	4	4	4	4

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		20 7	5 30 (84)			
20	EFFECT ( )	9	2					•
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W	80 75 97	70	73	100 95	(0)	100 80 5 90 (95)
30	Table 2 ( IBITION AND	1 WHEAT  W WO	06	80	8	85 98 10	100 100 100 100 100 100 (0)	) <b>1</b>
35	PLANT INH	SORGHU GRAIN W WO				95 98	100 100	
40	<b>\$</b> 4	I- E RATE	2.24	2.24	2.24	8.96	8.96	8.96
		ANTI- DOTE NO.	•	٠	•	9	9	9
45		RATE	1.12	1.12	2.24	0.14	0.56	0.56
50		HERB.	4	4	4	4	4	4

5															
10			RICE		W WO									40 100	(09)
15			TARTARY SOYBEAN RICE	SAT	OM M			45 7	20 30	(34)	20 28	(53)		07	
20		FFECT ( )	TARTAR	BUCKWHEAT	W WO			4	2		7				
25	(penuj	% PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN	OT	70 W WO	50 97	(69)						0		
30	Table 2 (continued)	AND % SA		REDROOT	WO W WO	90 80		95 70	80 73		85 85	<u>©</u>	65 35	09 09	<u>0</u>
30	Table	IBITION	SORGHUM WHEAT	×	3									65 32	
35		LANT INH	SORGH	GRAIN	OM M										
40		₽4 <b>&gt;</b> 2			RATE	8.96		8.96	8.96		0.56		0.56	0.56	
45			ANTI-	DOTE	NO.	ø		9	9		9		9	9	
					RATE	1.12		1.12	2.24		0.14		0.14	0.14	
50				HERB.	NO.	4		4	7		Ŋ		ιΩ	ហ	

5 100 100 2 X 10 TARTARY SOYBEAN RICE 9 20 28 40 50 Ş (20) (29) 15 3 BUCKWHEAT M W % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 40 75 Ş (41) PIGWEED CORN 3 Table 2 (continued) 0 REDROOT 75 80 35 100 85 25 **%** 90 06 06 3 9 65 95 Ş 80 95 SORGHUM WHEAT (16) 30 3 M MO GRAIN 35 2.24 RATE 0.56 0.56 0.56 2.24 40 ANTI-DOTE . 100 9 9 9 9 45 0.56 0.56 0.14 0.14 0.56 RATE HERB. 50 Ж 9 S 2 S Ŋ S

5 95 100 100 100 ş 10 TARTARY SOYBEAN RICE 9 (2) 45 50 Ş 28 (10)15 **>** 45 BUCKWHEAT M W % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş (100) PIGWEED CORN 3 Table 2 (continued) 25 M M REDROOT 06 06 75 80 20 60 90 90 85 (11) 9 9  $\epsilon$ 90 32 90 95 Ş SORGHUM WHEAT 30 9 9 3 OA A GRAIN 35 RATE 2.24 2.24 2.24 2.24 8.96 40 ANTI-DOTE 8 9 9 9 9 45 RATE 0.14 0.56 0.56 0.56 0.14 50 HERB. . 9 Ŋ S S S Ŋ

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10		RICE W WO		90 100			100 100
15	•	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			50 50		
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	Ş				15 75 (80)	
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W	55 35 0	75 60	100 90	70 80 15	06 06
30	Table 2 IBITION AN	SORGHUM WHEAT GRAIN W WO W WO		10 32 (69)			95 95
35	PLANT INH	SORGHUN GRAIN W WO					
40	<del>3€</del>	RATE	8.96	8.96	8.96	8.96	8.96
45		ANTI- DOTE NO.	•	9	٠	9	9
		RATE	0.14	0.14	0.56	0.56	0.56
50		HERB.	'n	<b>.</b>	'n	'n	'n

10			04						
		S	æ ≱						
		TARTARY SOYBEAN RICE BUCKWHEAT							
15		BEA	8						
		SOY	3						
	_	TARTARY SO BUCKWHEAT	Ø						
	ر	VRTA JCK	<b>3</b> >>	25	50	25	50	25	(40)
20	FBC	77 18		30	50	25	(	45	30 30
	E	z	8	25	80	25 (100)			
	d) ING	PIGWEED CORN REDROOT	3	15 25 (40)				C	ల
25	nne	ED	9€		. 95	0	99	0	ιO
	onti 6 SA	PIGWEED REDROOT	3	65	06	65	06	65	90
	Table 2 (continued)	Z Z		06	100	95	95	95	95
30	A A	AT	WO	45	97	45	97	\$ G	97
	ľabl (Tľ	SORGHUM WHEAT GRAIN	3	95	100 97	10 45 (78)	80 97 (18)	40 45	95 97 (5)
	, (ain	EUX N	08						
35	Ä	ORGHUI	3	35	95	35 (100)	95	35	10 95
	ANT	Ø		0	80	0	35	31	ខ្ព
	14 <b>3</b>								
40			RATE	99	9	<b>4</b>	4	9	9
			23	0.56	0.56	2.24	2.24	8.96	8.96
		i a	•						
45		ANTI- DOTE	NO.	7	7	7	7	_	7
40				_	_				
			RATE	0.03	0.14	0.03	0.14	0.03	0.14
				<b>-</b>	5	3	9	0	0
50		HERB.	NO.		1	1	<b>.</b>	-	H
		出	z				•		••

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		10 38 (74)				77 06
20	ECT ()							
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	(0	0)	8 100 82	0 90 92	0	S,
30	Table 2 (continued) ITION AND % SAFENIN	0	92 0 35 3) (100)	0 60 (100)	100 98	80 60	95 80 80	100 85
35	Tabl. INHIBITIO	SORGHUM WHEAT GRAIN W WO W W	43 90 93				(o) (9)	
<b></b>	% PLANT		35					
40		RATE	0.56	95.0	0.56	0.56	0.56	0.56
45		ANTI- DOTE E NO.	7	7	8 7	8 7	6 7	6 7
50		3. RATE	0.14	0.14	0.28	0.28	0.56	0.56
		HERB.	6	8	7	7	8	7

5 Ş 10 TARTARY SOYBEAN RICE 3 8 38 15 3 75 BUCKWHEAT 8 % PLANT INHIBITION AND % SAFENING EFFECT ( ) 3 20 ş 100 100 100 100 80 70 100 100 92 100 82 ခ PIGWEED CORN 3 Table 2 (continued) 95 REDROOT 25 M MO 100 98 90 35 9 9 90 90 ş SORGHUM WHEAT 80 92 (14) 30 3 GRAIN 24 24 10 43 (77) 35 RATE 0.56 0.56 2.24 2.24 2.24 2.24 40 ANTI-DOTE 80. ~ 45 RATE 0.14 0.14 0.28 0.28 50 . 100 8 7 4 ~ ~ ~

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10		9. 20.						
		RIC						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		77				38 (22)
		SOY AT		95				30 38 (22)
	0	TARTARY SOBUCKWHEAT						
20	ECT	TAR] BUCF						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	2 2			0 100	0 100		
05	ed) NING	PIGWEED CORN REDROOT W WO W I			100 100 100 100 (0)	100 100 (0)		
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED REDROOT W WO	80	85	100	70	35	09
	% a	PIG RED	06	100 85	100 10	80	95	95
30	е 2 N AN	AT WO	95				92 (14)	
	Tabl ITIO	SORGHUM WHEAT GRAIN W WO W W	95 (C				80 92 (14)	
	NHIB	GRAIN W WO					43	
35	I IN	SOR GR	(9)				ت ه	
	PLA							
40	8€	RATE	54	2.24	2.24	2.24	8.96	8.96
			2.24	.5	2.	2,	ထံ	αÓ
		ANTI- DOTE NO.	7	~	7	~	~	-
45		2 2 7						
		RATE	0.56	0.56	1.12	1.12	0.14	0.14
<b>E</b> C			3	0	-	• •	•	-
50		HERB.	8	2	8	8	8	8
		<b>=</b>			•			

5 Ş 10 TARTARY SOYBEAN RICE 3 Ş 77 06 15 3 BUCKWHEAT ο<u>γ</u> % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş 100 100 100 100 85 70 100 100 100 98 70 82 (15) 100 60 90 92 3 9 PIGWEED CORN ව 3 Table 2 (continued) REDROOT 25 W WO 95 95 100 80 95 85 9 ş SORGHUM WHEAT 30 9 3 GRAIN A FO 90 95 9 35 RATE 8.96 8.96 8.96 8.96 8.96 8.96 40 ANTI-DOTE 7 45 RATE 0.28 0.28 0.56 0.56 1.12 1.12 HERB. 50 . 9 7 ~ ~ ~ 7

5								
10		RICE W WO						
15		SOYBEAN T W WO						
20	FECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT O W WO W WO W						
25	inued) AFENING El	PIGWEED CORN REDROOT W WO W WO	5 30 10	5 40 40	55 75 10	5 55 40	55 30 10	5 50 40
30	Table 2 (continued)	_	35 55 (37)	25 55 (55)	95 5	50 55 (10)	85 5	100 55
35	Table 2 (continued)	SORGHUM WHEAT GRAIN W WO W WO						
40	₽ <b>4</b>	RATE	0.56	0.56	2.24	2.24	8.96	8.96
45		ANTI- DOTE NO.	7	7	7	7	7	7
		RATE	2.24	87.4	2.24	87.7	2.24	4.48
50		HERB.	က	က	ю	m	က	ო

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10	<b>.</b> .	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W WO					10 7	20 30 (34)
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	Q			85 90	95 97 (3)		
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W V	100 95	95 100 (5)	75 80 8 (7)	65 80 9	65 70 (8)	(6E)
30	Table 2 IBITION A	SORGHUM WHEAT GRAIN W WO W WO	100 98	100 100 100 95 (0) (0)				
35	PLANT INH	SORGHUP GRAIN W WO	100 98	100 100				
40	<b>≯</b> €	RATE	0.56	0.56	0.56	0.56	0.56	0.56
		ANTI- DOTE NO.	7	_	7	7	~	7
45		RATE	0.14	0.56	0.56	1.12	1.12	2.24
50		HERB.	m	ĸ	4	4	4	4

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					20 7	25 30 (17)
20	FECT ( )							
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	100 95	00 100 (0)	80 50 90	65 80 70 97 (19) (28)	90 70	70 73 (5)
30	Table 2 ( ITION AND	•	1 86 98 1	100 100 100 100 100 100 (0)	85	•	g.	7
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W W	95 98	100 100				
40	36	RATE	2.24	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	~	7		7	7	~
		RATE	0.14	0.56	0.56	1.12	1.12	2.24
50		HERB.	4	4	4	4	4	4

5									
10		N RICE W WO							
15		SOYBEAN T W WO					~	30	28
20	FECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					. 8	95	09
25	inued) AFENING EF	PIGWEED CORN REDROOT W WO W WO	10	00	(95)	(13)	•		
	Table 2 (continued) ITION AND % SAFENIN	0	100 95	(0)	100 80	100 80	100 70	100 73	85 85 (0)
30	Table BITION	1 WHEA	70 98 (29)	100 100					
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUR GRAIN W WO	100 98	(0) (0) (0)					
40	<b>⊁</b> €	RATE	8.96	8.96	8.96	8.96	8.96	8.96	0.56
45		ANTI-DOTE NO.	~	^	~	^	^	7	7
		RATE	0.14	0.56	0.56	1.12	1.12	2.24	0.14
50		HERB.	<b>.</b>	4	4	4	4	4	ιn

5 ş 90 100 100 100 (10) 10 TARTARY SOYBEAN RICE 3 £ 20 28 3 15 75 9 BUCKWHEAT OM M % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş (24) 35 75 PIGWEED CORN 3 Table 2 (continued) 0 REDROOT 9 ≯ 25 35 70 80 9 90 90 90 (13) (75) 85 9 15 9 95 9 Ş 32 SORGHUM WHEAT 70 95 (27) 30 3 20 M W GRAIN 35 RATE 0.56 0.56 0.56 0.56 0.56 2.24 40 ANTI-DOTE . 8 ~ ~ 7 ~ 45 0.56 0.14 0.14 0.56 0.56 RATE HERB. . 20 50 S S S 2 S S

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10 ş 90 100 90 100 (10) (10) TARTARY SOYBEAN RICE 3 15 Ş 50 50 28 9 3 8 BUCKWHEAT M M % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş (100) 75 PIGWEED CORN 3 Table 2 (continued) 25 0 0 0 REDROOT M MO 35 9 90 70 80 (59) 90 90 (13) 35 85 25 90 65 95 75 30 ટ્ર SORGHUM WHEAT 10 32 85 95 (11) (69) 3 M W GRAIN 35 40 RATE 2.24 2.24 2.24 2.24 2.24 8.96 8.96 ANTI-DOTE ÿ. ^ ~ ~ 45 RATE 0.14 0.14 0.56 0.56 0.56 0.14 0.14 50 HERB. NO. S S S S S S S

10		7 RICE	W WO	(15)			100 100 (0)		
15		TARTARY SOYBEAN RICE BUCKWHEAT	M M		90 50				
20	FECT ( )	TARTARY SOBUCKWHEAT	W W					5 25 (80)	20 50
25	aued) FENING EB	PIGWEED CORN REDROOT	OM M 0			20 75 (74)		15 25 (40)	45 80 (44)
30	Table 2 (continued) ITION AND % SAFENIN		0M M	95 60	95 90	(0)	100 90	85 65	95 90
w	Table ;	SORGHUM WHEAT GRAIN	0M M	15 32 (54)			70 95	70 45	100 97
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUI	0A M					10 35	95 95
40	ઋ		RATE	8.96	8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE	NO.	^	7	^	7	6	σ <b>,</b>
50			RATE	0.14	0.56	0.56	0.56	0.03	0.14
~		HERB.	NO.	'n	S	S	พ	-	-

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						75 38
20	FECT ( )		10 25	20 50 (60)	5 25 (80)	25 50 (50)		1
25	itinued) SAFENING EI	PIGWEED CORN REDROOT W WO W WO	65 0 25 10 (100)	90 20 80	65 0 25 (100)	90 20 80 (75)	35	60
30	Table 2 (continued) ITION AND % SAFENIN	•	45 90	90 97 90 90 (8)	45 85 (100)	75 97 95 9	25 43 80 92 10 35 (42) (14) (72)	0 60 (100)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W	0 35 60 (100)	85 95 96 (11)	10 35 0 (72)	65 95 7! (32)	25 43 8(	
40	<b>8</b> €	RATE	2.24	2.24	8.96	8.96	0.56	0.56
		ANTI- DOTE NO.	6	5	o.	6	O	6
45		RATE	0.03	0.14	0.03	0.14	0.14	0.14
50	٠	HERB.		F	-	-	8	7

5								
10		§						
		RICE W						
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				_		
15		SOYB!				77		
	_	TARTARY SOBUCKWHEAT				95		
	C	CARTARY SUCKWHE W WO						
20	ECT	TA BU						
	Table 2 (continued)	ORN W WO	82	92			100	100
	ed) VING	COR.	95	85 9			(0)	100 1
25	inuc AFE)	EED OOT		9 09	80	85	8	 o _
	Table 2 (continued) HIION AND % SAFENIN	PIGWEED CORN REDROOT W WO W	100 98	9 08		85 8	100 100 100 100 (0) (0)	70 70 100 100 (0)
	2 (		Ä	œ	06	<b>∞</b>	-	7
30	ble	SORGHUM WHEAT GRAIN W WO W WG			95 (0)			
	Ta IBIT	3 5 7 0			95			
	INI	SORGHUP GRAIN W WO		,	95 95			
35	TNA	S S 3		,	95			
	TA.							
	34	RATE	99	93	99	99	99	99
40		22	0.56	0.56	0.56	0.56	0.56	0.56
		ANTI- DOTE NO.	6	<b>6</b> 1	6	σ.	6	6
45		ANTI- DOTE NO.	•	•	•	-	-	•
<b>40</b>		題	28	0.28	26	0.56	1.12	1.12
		RATE	0.28	0	0.56	0	<u>.</u>	+
50		<u>.</u> .						
		HERB.	7	8	8	8	8	7

5									
10		RICE	M WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT	W WO		95 38				95 77
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	TARTARY SO BUCKWHEAT	A 40						•
	G EF	RN	M <sub>O</sub>			82	92		
25	rued) Enin	8 8	3			06	95		
	ontir 6 SAE	PIGWEED CORN REDROOT	W WO	35	60 (100)	100 98	09	80	85 (18)
	2 (cc	<u>a</u> 8		95	0	100	75	06	22
30	Table 2 (continued) ITION AND % SAFENIN	HEAT	W WO	92				95	
	Tal	Σ ×		82				95	
35	HNI .	SORGHUM WHEAT GRAIN	W WO	20 43 (54)				95	
	LANT	Ø		20				75	
40	<b>%</b> €		RATE	2.24	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE	NO.	6	6,	6	6	6	6
			RATE	0.14	0.14	0.28	0.28	0.56	0.56
50		HERB.	NO.	7	7	8	N	74	8

5		·							
10		RICE	0A A						
<b>15</b>		OY.	9 3				30 38 (22)		
20	FECT ( )		3		_				
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	_	W WO W WO	<u></u>	0 100 100	s C	Q	8 95 82	0 85 92 (8)
30	Table 2 (continued) ITION AND % SAFENIN		W WO W WO	(0)	25 70 (65)	92 10 35	100 60	95 98 (4)	75 60
35	Tabl INHIBITIO	. <del></del>	3 0 3			40 43 85 92 (7) (8)			
40	% PLANT		ы		4		vo	9	9
•0		ANTI- DOTE			9 2.24	9 8 96	9 8.96	9 8 96	9 8.96
45			RATE N 1.12		1.12	0.14	0.14	0.28	0.28
50			, 2 ,		8	8	8	8	7
		•							

5 10 ş TARTARY SOYBEAN RICE 3 Ş 77 06 15 3 BUCKWHEAT M W % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ß 100 100 100 100 75 70 100 100 15 10 (63) 15 40 9 PIGWEED CORN 9 3 Table 2 (continued) 25 REDROOT 94 M 30 55 20 80 55 (75) (46) 90 85 9 95 Ş SORGHUM WHEAT 30 95 95 9 3 M MO GRAIN 70 95 (27) 35 RATE 8.96 8.96 8.96 40 8.96 0.56 0.56 ANTI-DOTE NO. 0 6 6 0 6 6 45 RATE 0.56 0.56 1.12 1.12 2.24 4.48 50 HERB. . 8 8 8 7 N ന ო

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10		. OM						
		TICE A						
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
15		OYBE						
	_	TARTARY SC BUCKWHEAT W WO 1						
	<u> </u>	CARTARY SUCKWHE W WO						
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )			_				
	9	RZN WO	10 (50)	40 (100)	10 (50)	10 40 (75)		
25	ued) ENIN	D COR	2	0	2	92		
	atin SAF	PIGWEED CORN REDROOT W WO W	55	55 (28)	55	55	95	(5)
	oS) ₽		20	40 55	09	65	95 95	95
30	Table 2 (continued) .TION AND % SAFENIN	SAT WO					98	100 100 100 100 95 100 (0) (0) (5)
	Tabl ITIC	SORGHUM WHEAT GRAIN W WO W W					8 S	100 C
	NHIB	SORGHUM GRAIN W WO						100
35	ij	SOR GR					100 98	(0)
	PLA							
	<b>ક</b> થ	RATE	4	5	9	9	9	99
40		8	2.24	2.24	8.96	8.96	0.56	0.56
		ANTI- DOTE NO.	σ,	6	6	6	σ,	6
45		ANTI. DOTE NO.						
		RATE	2.24	4.48	2.24	4.48	0.14	0.56
		₹	2	4	7	4	0	0
50		HERB.	m	m	m	က	4	4
		및 Z						

5								
10		9						
		RICE						
		EAN 1						
15		OYBE			^	30		
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			30	45		
	C	TARTARY SOBUCKWHEAT						
20	ECT	TAR						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	, O3	90	97				
	d) Ing	PIGWEED CORN REDROOT W WO W	50 90	95 9 (3)				
25	lnue	WEED WO						0
	ont:	PIGWEED REDROOT W WO	80 (19)	60 80 (25)	07 07 (0)	73	95	(0)
	2 (c		65	09	02	75	95	100
30	Table 2 (continued) .TION AND % SAFENIN	EAT WO					98	100 100 100 100 100 100 (0)
	Tab 31TI	A VIII					95	100 1
	NHII	SORGHUM WHEAT GRAIN W WO W W					œ	00
35	1	SOR GR					95 9 (4)	(0)
	PLAN						6,	Ä
	34	e		_				
40		RATE	0.56	0.56	0.56	0.56	2.24	2.24
		<u>.</u>	•	•	Ü	J	N	N
45		ANTI- DOTE NO.	. <b>o</b> v	6	6	0	0	ο.
₩.								
		RATE	0.56	1.12	1.12	2.24	0.14	0.56
50			-	• •	• •	'4	•	S
		HERB.	4	4	4	4	4	4
		<b>R</b> -			-			

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			(100)	55 30		
20	ECT ( )							
25	tinued) SAFENING EFI	PIGWEED CORN REDROOT W WO W WO	80 30 90 (19)	80 85 97 (13)	70	73	95	100
30	Table 2 (continued)	_	65 80	85	80	7 07 (5)	100 98 95 95 (0)	100 100 100 100 100 100 (0)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT (	SORGHUM WHEAT GRAIN W WO W W					95 98 10	100 100 10
40	<b>5</b> €	RATE	2.24	2.24	2.24	2.24	8.96	8.96
45		ANTI- DOTE NO.	6	<b>o</b>	6	Ġ	6	σ,
~~		RATE	0.56	1.12	1.12	2.24	0.14	0.56
50		HERB.	4	4	4	4	4	4

5									
10			ş						
		RICE	3						
		EAN	Q.				0	<b>~</b> -	
15		SOYE	3			2 7	30	10 28 (65)	
		TARTARY SOYBEAN RICE BUCKWHEAT	MO			45	20	21	
20	CI (	TART BUCK	3						
	Bire		9	9 0	<b>^</b>				
	d) ING	PIGWEED CORN REDROOT	3	5 90	(18)				
25	inue AFEN	EED OOT	<b>M</b>	. 65	) 80				0
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED REDROOT	3	85 80	80 80	9 10	60 73 (18)	85	35
30	2 ( AND		MO MO	80	æ	85	9	95	50
	able TION	WHEA	3						
	T HIBI	SORGHUM WHEAT GRAIN	<b>%</b>						
35	r N	Sorchur Grain	3						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )								
40	3-6		臣	<b>10</b>					
₩			RATE	8.96	8.96	8.96	8.96	0.56	0.56
		ANTI- DOTE	·	_					
45		ANTI	NO.	9	6	6	9	6	6
			RATE	0.56	1.12	1.12	2.24	14	14
			22	· o	;	i.	2.	0.14	0.14
50		HERB.	NO.	4	4	4	4	٠	2
		閚	~						- •

5 Ş 35 100 95 100 10 (65) TARTARY SOYBEAN RICE (2) 3 ş 20 28 15 3 9 9 BUCKWHEAT OM M % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Z 65 80 15 75 (80) PICWEED CORN Table 2 (continued) 0 25 REDROOT (84) 32 10 60 90 90 100 90 (19) 85 35 9 90 55 ş SORGHUM WHEAT 95 95 30 9 3 40 GRAIN QA 14 35 RATE 0.56 0.56 0.56 0.56 2.24 2.24 40 ANTI-DOTE М В 6 0 45 RATE 0.14 0.56 0.56 0.56 0.14 0.14 50 HERB. . 100 S S 'n S S S

5 Ş 90 100 100 100 10 (10) TARTARY SOYBEAN RICE 9 3 9 (10) 28 45 50 15 3 9 BUCKWHEAT M W % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş 10 75 (87) PIGWEED CORN 3 Table 2 (continued) 25 REDROOT Q± • 65 80 9 90 06 06 (19) (18) 70 85 9 95 65 Ş SORGHUM WHEAT 32 95 95 30 9 3 80 M M GRAIN 35 RATE 2.24 2.24 2.24 8.96 2.24 40 ANTI-DOTE МО. 6 9 9 0 9 45 RATE 0.14 0.56 0.56 0.56 0.14 HERB. 50 NO. 'n S S

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Z 10 65 100 100 100 (35) 9 TARTARY SOYBEAN RICE ş 20 15 9 BUCKWHEAT M MO % PLANT INHIBITION AND % SAFENING EFFECT ( ) (40) 15 25 20 M MO 10 25 (66 (60) (42) 65 80 20 75 PIGWEED CORN Table 2 (continued) 0 25 REDROOT W WO 35 (19) 90 65 32 100 60 85 90 70 95 80 90 (12) 9 9 ş (100)35 75 45 (27) SORGHUM WHEAT 30 3 0 M WO GRAIN (100) 35 0 RATE 8.96 8.96 8.96 8.96 8.96 0.56 40 ANTI-DOTE . 0 9 6 σ σ 45 0.14 0.14 0.56 0.56 0.56 0.03 RATE 50 HERB. 8 S S S S -S

10	O :	TARTARY SOYBEAN RICE BUCKWIEGAT	WO W WO W WO	20	(99)	(60) 25 (0)	(60) 25 (0) 50 (0)	50 0) 50 0) 25 25	(60) (0) (0) (10)
20	FECT	TAR	3	20		25		0 0	0 0
25	inued) AFENING EF	PIGWEED CORN REDROOT	WO W WO	(77) 06 72 80		5 5 25 (80)	5 (3 (1)	5 07 5	5 25 (80) 70 80 (13) 5 25 (80) 50 80
	Table 2 (continued) ITION AND % SAFENIN		WO W WO	95		95 65	95	95 95	95 95 95
30	Table IBITION	SORGHUM WHEAT GRAIN	>	50 97		0 45 (100)			
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHU	W WO	95 95		20 35 (43)	4 0	7 0 1	20 35 (43) 95 95 (0) (72) 25 95 (43)
40			RATE	0.56		2.24	2.24	2.24 2.24 8.96	2.24 2.24 8.96 8.96
45		ANTI- DOTE	NO.	10		10	10	10	10 10 10
70			RATE	0.14		0.03	0.03	0.03	0.03
50	•	HERB.	NO.			F		п п	е е е

5 Ş 10 TARTARY SOYBEAN RICE 3 ş 30 38 (22) 17 3 15 95 BUCKWHEAT W 40 % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş 100 100 100 100 (14) 100 98 100 82 80 92 PIGWEED CORN 9 3 Table 2 (continued) REDROOT OH M 25 9 45 60 (25) 80 85 9 90 20 85 SORGHUM WHEAT ß 95 95 ව 30 3 GRAIN M 40 85 95 (11) 35 RATE 0.56 0.56 0.56 0.56 0.56 0.56 40 ANTI-DOTE NO. 10 10 10 2 2 10 45 RATE 0.14 0.28 0.28 0.56 0.56 1.12 HERB. М М 50 7 4 8 ~ ~ ~

5									
10		RICE	0% %						
15		TARTARY SOYBEAN RICE BUCKWHEAT	W WO			75 38			
20	FECT ( )	TARTARY SO BUCKWHEAT	W WO			~			
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	W WO W WO	65 70 100 100 (8) (0)	35 35 (0)	60 (100)	95 98 100 82 (4)	60 85 92 (8)	; 80 (7)
30	Table 2 BITION AN	SORGHUM WHEAT GRAIN	W W0	•	90 92 3 (3)	0	6	65	95 95 75 (0) (
35	PLANT INHI	SORGHU	M W		65 43				95 95
40	<b>3</b> €		RATE	0.56	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE	NO.	10	10	10	10	10	10
			RATE	1.12	0.14	0.14	0.28	0.28	0.56
50		HERB.	NO.	8	7	7	8	N	8

5								
10		RICE						
15		TARTARY SOYBEAN RICE BUCKWHEAT	85 7				20 38 (48)	
20	FECT (		:					
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO		(48) 100 100 100 100 (0) (0)	75 70 100 100 (0)	5 35 (29)	(100)	95 98 100 82 (4)
30	Table 2 ( BITION AND	SORGHUM WHEAT GRAIN W WO W WO	) :	1	7	55 92 25 (41)	0	oi.
35	PLANT INHII	SORGHUM GRAIN				35 43 (19)		
40	86	RATE	2.24	2.24	2.24	8.96	8.96	8.96
45		ANTI-DOTE	10	10	10	10	10	10
		RATE	0.56	1.12	1.12	0.14	0.14	0.28
50		HERB.	8	2	8	8	8	7

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10		χ χ					
		RICI					
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			7.1		
15		SOY]			90 7		
		TARTARY S BUCKWHEAT W WO			σ.		
	Table 2 (continued)	TART BUCK W					
20	3343	0	~!			9	o
	CI SNG 1	ORN	90 92			95 100 100 100 (5) (0)	100
25	nuec	PIGWEED CORN REDROOT W WO W				0 10	95
	onti % SA	PIGWEED REDROOT W WO	9	80 (19)	85	10(	70
	Table 2 (continued)		80	65	90	95	85
30	le ;	EAT WO		95 95			
	Tab	M WHE		95			
	INHI	SORGHUM WHEAT GRAIN W WO W W		95			
35	. FR	SOI ×		85 95			
	PLA						
	3€	RATE	90	9	9	يو	9
40		2	8.96	8.96	8.96	8.96	8.96
		ANTI-DOTE NO.	10	10	10	10	0
45		A S z	F	-	-	H	10
		RATE	0.28	0.56	0.56	1.12	1.12
		2	ó	ó	ó	<b>~</b> i	<b>;</b>
50		HERB.	8	8	7	7	8
		HZ					

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· 10		RICE	OM M						
15		TARTARY SOYBEAN RICE BUCKWHEAT	OA A						
20	FECT ( )	TARTARY S BUCKWHEAT	OM A						٠
25	aued) FENING EF	PIGWEED CORN REDROOT	0 W W	55 10 10 100) (0)	0 40	5 10	0 40	0 10 (100)	10 40 (75)
	Table 2 (continued) ITION AND % SAFENIN		NO W	0 55 (100)	0 55 (100)	0 55 (100)	15 55 (73)	10 55 (82)	50 55 (10)
30	Table HIBITION	SORGHUM WHEAT GRAIN	3						
35	Table 2 (continued)	SORGHURGRAIN	<b>X</b>						
40	\$4		RATE	0.56	0.56	2.24	2.24	8.96	8.96
45		ANTI-	. NO.	10	10	10	10	10	10
			RATE	2.24	4.48	2.24	4.48	2.24	4.48
50	·	HERB.	NO.	m	ო	m	m	m	က

5							
10		RICE W WO					
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					15 7
20	FECT ( )						,
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	95	0 100	(13) (6)	80 95 97 (3)	70
30	Table 2 (continued) ITION AND % SAFENIN		70 98 95 95 (29) (0)	100 100 95 100 100 100 (0) (5) (0)	70 80 (13)	8	70 70 (0)
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W WO	95 98 (4)	100 100 (0)			
40	*	RATE	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	10	10	10	10	10
		RATE	0.14	0.56	0.56	1.12	1.12
50		HERB.	4	4	4	4	4

5 10 옻 TARTARY SOYBEAN RICE 3 Ş 30 (84) 15 3 BUCKWHEAT S OH M % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş 80 97 (33) (18) 55 90 PIGWEED CORN 3 Table 2 (continued) 25 REDROOT M WO 100 100 95 100 95 100 70 80 55 73 70 80 (25) (13) (13) 25 98 100 95 3 SORGHUM WHEAT Ş 30 (75) 3 3 OM M GRAIN 95 98 3 <u>e</u> 35 RATE 0.56 2.24 2.24 2.24 2.24 40 ANTI-DOTE . 80 2 10 10 20 10 45 0.14 0.56 0.56 1.12 RATE 2.24 50 HERB. 80. 4 4 4 4

10		SEAN RICE WO W WO						
15	0	TARY SOYE KWHEAT WO W	0 7 (100)	20 30 (34)				
20	I) NG EFFECT	Ş					90 (34)	6 97 (13)
25	continued % SAFENI	PIGWEED CORN REDROOT W W W W	70 (22)	65 73 (11)	(0)	100	55 80 60 (32) (3	60 80 85 (25) (
30	Table 2 (continued) BITION AND % SAFENIN	1 WHEAT  W WO	55	65	35 98 95 (65) (0	100 100 85 100 95 100 (0) (15) (5)	55	09
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUR GRAIN W WO			100 98	100 100 (0)		
40	34	RATE	2.24	2.24	8.96	8.96	8.96	8.96
45		ANTI- DOTE NO.	10	10	10	10	10	10
		RATE	1.12	2.24	0.14	0.56	0.56	1.12
50		. HERB.	4	4	4	4	4	4

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Ş 10 55 100 (42) TARTARY SOYBEAN RICE 3 8 (29) 50 30 20 28 (53) 15 3 BUCKWHEAT M M % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 8 PIGWEED CORN 3 Table 2 (continued) 25 REDROOT M MO 65 70 73 85 35 09 07 (34) 8 20 75 90 Ş SORGHUM WHEAT 32 30 3 35 M MO GRAIN 35 RATE 8.96 8.96 0.56 0.56 0.56 40 ANTI-DOTE NO. 10 2 10 9 20 45 2.24 0.14 0.14 0.14 1.12 RATE 50 HERB. ЖO. Þ 4 S S S

5 10 ş 100 100 9 TARTARY SOYBEAN RICE 3 ş 25 50 (20) 28 15 3 9 BUCKWHEAT % **%** % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş (09) 70 80 30 75 PIGWEED CORN 3 Table 2 (continued) 0 25 REDROOT ς 3 06 06 (13) (12) 35 80 90 (54) 65 85 ခ 65 Ş 70 95 SORGHUM WHEAT (27) 30 3 M M GRAIN 35 RATE 0.56 0.56 0.56 40 2.24 2.24 ANTI-DOTE ۶ ک 2 2 10 9 9 45 RATE 0.56 0.56 0.56 0.14 0.14 50 HERB. М М S S 'n S Ŋ

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10 ß 45 100 100 100 (55) ව TARTARY SOYBEAN RICE 3 8 25 50 (20) 20 28 (29) 15 3 BUCKWHEAT M MO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş (67) 25 75 PIGWEED CORN 3 Table 2 (continued) 0 25 REDROOT M M 65 80 35 30 60 (20) (19) 90 (12) 85 90 75 85 9 9 95 SORGHUM WHEAT **}** 25 32 (22) 30 85 95 (11) W WO GRAIN 35 RATE 2.24 2.24 2.24 2.24 8.96 8.96 40 ANTI-DOTE . Ю 10 9 2 10 10 10 45 0.14 0.14 0.14 RATE 0.56 0.56 0.56 50 HERB. . 0 S 2 5 S S S

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10		RICE W WO	95 100 (5)		90 100 (10)			
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	6	75 50	6			
20	FFECT ( )						5 25	15 50 (70)
25	tinued) SAFENING E	PIGWEED CORN REDROOT W WO W WO	09	06	90	80 20 75 (19) (74)	65 0 25 (100)	90 75 80
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	0	0 32 70 (100)	95	65 95 90 90 (32) (0)	65	10 45 80 (78)	95 97 95
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W W	·		·		0 35 1 (100)	85 95 9
40	**	RATE	8.96	8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE NO.	10	10	10	10	11	11
		RATE	0.14	0.56	0.56	0.56	0.03	0.14
50	·	HERB.	Ŋ	រប	so	ю	<del></del>	-

10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						55 38
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	I TARTARY SO BUCKWIEAT WO W WO	20 25 (20)	100 50	(60)	(60)		
25	inued) AFENING E	COR® ➤	65 10 25 (60)	08 80 80	5 15 25 (40)	0 75 80	5	0
30	Table 2 (continued)	0	9 26 27	95	45 100 65 (100)	97 100 90	92 0 35 35) (100)	90 06
	Table NHIBITION	SORGHUM WHEAT GRAIN W WO W W	35 55 <i>(</i>	95 35 97 (11)	35 0 (	95 10 97 (74) (90)	43 60 92 (19) (35)	
35	FLANT I	SOR GR	30	85	15	25 (7	. 35	
40		RATE	2.24	2.24	8.96	8.96	0.56	0.56
45		ANTI- DOTE NO.	11	11	11	11	n	11
50		RATE	0.03	0.14	0.03	0.14	0.14	0.14
50		HERB.	r	H		-	8	8

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10		9. Se						
15	C .	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W 6				77 56		
20	FFECT						_	
25	ntinued) SAFENING E	PIGWEED CORN REDROOT W WO W WO	98 100 82	60 80 92 (14)	80	85	100 100 100 100 (0) (0)	70 100 100 (0)
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	0	100 98	65	95 95 10 80 (0) (88)	9 56	100 1(0)	80 7
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W W			(4)			
40	\$4	RATE	0.56	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	11	11	n	11	<b>:</b>	11
		RATE	0.28	0.28	0.56	0.56	1.12	1.12
50		HERB.	8	7	64	8	8	2

5 3 10 TARTARY SOYBEAN RICE 3 Ş 38 95 77 3 15 75 BUCKWHEAT 93 34 % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 OM M 82 92 PIGWEED CORN (8) Table 2 (continued) 82 95 REDROOT M M 35 (100) 25 9 9 98 80 85 9 95 80 85 75 0 95 Š SORGHUM WHEAT 65 92 (30) 95 30 3 35 Q4 Α GRAIN 43 90 95 9 45 35 RATE 2.24 2.24 2.24 2.24 2.24 2.24 40 ANTI-DOTE М О 11 Ξ 11 = H 1 45 RATE 0.14 0.14 0.28 0.56 0.28 0.56 HERB. NO. 50 ~ ~ 4 ~ ~ ~

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				70 38		
20 ·	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )		o	0		7		
25	inued) AFENING E	REDROOT  W WO W WO	100 100 100	0 95 100		0	3 95 82	80 92
30	Table 2 (continued) ITION AND % SAFENIN	0	95 10	85 70	2 10 35	09 06	95 98 (4)	80 60
3.0	Table	SORGHUM WHEAT GRAIN W WO W W			(68) (68)			
35	PLANT I	SOR GR.			35 43			
40		RATE	2.24	2.24	8.96	8.96	8.96	8.96
45		DOTE NO.	11	11	11	11	11	11
		RATE	1.12	1.12	0.14	0.14	0.28	0.28
50		HERB.	2	8	8	8	6	8

5 Ş 10 TARTARY SOYBEAN RICE 3 ş 77 3 15 85 BUCKWHEAT **%** % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş 100 100 100 100 90 70 100 100 2 40 PIGWEED CORN 9 9 3 Table 2 (continued) 45 20 REDROOT % 3 25 50 55 85 50 55 20 80 (75) (10) (10) <u>e</u> 90 ş SORGHUM WHEAT 95 95 30 3 GRAIN 64 74 85 95 (11) 35 RATE 8.96 8.96 8.96 8.96 0.56 0.56 40 ANTI-DOTE М В 11 11 11 Ξ 1 45 0.56 RATE 0.56 1.12 1.12 2.24 4.48 HERB. ₩. 50 ~ ~ 8 7 ന ო

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10 15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W WO						
20	ECT ( )	TARTARY SOY BUCKWHEAT W WO W						
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	15 55 55 10 (73)	90 55 80 40	5 55 50 10	50 55 45 40 (10)	95 95 (0)	00 100 (0)
30	table 2 (	•	Ħ	6	85	ភ	95 98 99	5 100 10
35	1 PLANT INHIBI	SORGHUM WHEAT GRAIN W WO W W					95 98 9 (4)	100 100 95 100 100 100 (0) (5) (0)
40	94	RATE	2.24	2.24	8.96	8.96	0.56	0.56
45		ANTI- DOTE NO.	11	11	11	11	11	11
		RATE	2.24	4.48	2.24	4.48	0.14	0.56
50		HERB.	၈	Ø	e	က	4	4

5							
10		RICE W WO					
15		SOYBEAN NT W WO			(100)	0 30 (100)	
20	EFFECT ( )	UN TARTARY SOYBEAN RICE BUCKWHEAT WO W WO W W		97	0	0	
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W W	(0)	90 80 95 9	70 70 (0)	70 73 (5)	95 95 (0)
30	Cable 2 ITION AN	WHEAT W WO		٠	•	•	( <del>)</del> (5)
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W WC					5 86 56
40	36	RATE	0.56	0.56	0.56	0.56	2.24
45		ANTI- DOTE NO.	::	11	11	Ξ.	11
		RATE	0.56	1.12	1.12	2.24	0.14
50		o. RB.	4	4	4	4	4

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10		_						
		ICE W WO						
		RIC						
15		SEAN WO						
		SOYBE V V				~	30	
		Y S( EAT				10	55	
20	$\mathbb{C}$	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
	CL	TAR BUC W						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	N ON		_				
0		CORN W		90 (33)	97 (3)			
25	red)	•		55	95			
	tin SAFT	PIGWEED REDROOT W WO	001		80	•	က	95
	Con %	PIG RED	(0)	60 80 (25)		07 07 (0)	70 73 (5)	
30	2 ( And	0	ē o	9	85	2	7	95
	Table 2 (continued)	ИЕАТ	(0)					98 (75)
	Tak BITI	<b>3 3</b>	100					25
35		SORGHUM WHEAT GRAIN W WO W W	100 100 100 100 100 100 (0)					98 25
	Ħ	SOR GR	(0)					
	[FAN		Ä					95
40	9-6 Eri							
		RATE	2.24	2.24	2.24	2.24	2.24	8.96
		щ		6.		4	2.	<b>∞</b>
0		ANTI- DOTE NO.	_			_		
45		ANTI DOTE NO.	11	11	11	11	11	11
		딢	9	<b>v</b> 9	8	0		.•
		RATE	0.56	0.56	1.12	1.12	2.24	0.14
50							- •	_
		HERB.	4	4	4	4	4	4
		# ~			•			

5									
10		<i>t</i> ≈1	8						
		RICE	>						
		SAN	0,4					0	<b>20</b>
15		OYBI	3				~	30	28
	_	RY S HEAT	0				25	50	07
	Ų.	TARTARY SOYBEAN RICE BUCKWHEAT	0A A						
20	FECT	TA							
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	≋	W <sub>O</sub>		90	97			
	ied)	<u>5</u>	3		6 5	95			
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT	3	100	80		02	73	85
	(con	PIG RED	3	(0)	85	100 80	22	75	70 85 (18)
	2 (	H	S.	100 100 100 100 100 100 (0) (0)	~	•	,-	, -	•-
30	able FION	SORGHUM WHEAT GRAIN	3	(6)					
	T. IIBI:	E M	MO MO	0 10					
	INI	GRGHU	3	(0)					
35	ANT	ω ·		10					
	% PI								
40			RATE	8.96	8.96	8.96	8.96	8.96	0.56
			_	<b>6</b> 0	œ	∞	<b>∞</b>	∞	0
		ANTI- DOTE	NO.	11	11	11	11	11	11
45		Z A	-						
			RATE	0.56	0.56	1.12	1.12	2.24	0.14
			<b>~</b>	0	0	7	-	7	0
50		HERB.	NO.	4	4	4	4	4	S
		閚	z						

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10 100 100 Ş 85 100 (15) 9 TARTARY SOYBEAN RICE 3 Ş 15 50 50 9 3 BUCKWHEAT A Wo % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş 40 75 (41) PIGWEED CORN 3 Table 2 (continued) 25 REDROOT W W 65 80 06 06 35 50 60 (19) 85 90 (11) 9 9 9 옻 32 30 SORGHUM WHEAT 80 95 3 9 GRAIN A ¥0 35 RATE 0.56 0.56 0.56 0.56 0.56 40 DOTE = 11 11 H Ξ 45 RATE 0.14 0.14 0.56 0.56 0.56 HERB. 50 NO.

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10			Ħ	<b>%</b>						100	2				
			TARTARY SOYBEAN RICE BUCKWHEAT	<b>&gt;</b>						100 100	<u>(0)</u>				
15			YBEA	W 40		28	(100)	50 50	<u>(0</u>					28	(29)
	,	_	RY SC	2		0	•	20						20	
20		<u>.</u>	TARTARY S BUCKWHEAT	M WO											
		리 의 과		§								75	6		
25	led)	DNING	202 COR	3	0							45 75	(40)		
20	Table 2 (continued)	SAF	PIGWEED CORN REDROOT	OM M	35	85	(30)	90	(12)	75 90	(11)	80	(19)	85	(9)
	2 (cc	AND 7		NO M	20	9		80				65		80	
30	able	NOT I	WHEAT	<b>3</b>						90 95	9				
	H	NH I B.I	SORGHUM WHEAT GRAIN	W WO						ο,					
35		INT	SOR	<b>&gt;</b>					-						
	ě	71. *													
40				RATE	2.24	2.24		2.24		2.24		2.24		8.96	
			AŅTI- DOTE	NO.	11	11		11		11		11		11	
45		•	A G												
				RATE	0.14	0.14		0.56		0.56		0.56		0.14	
50			B											ı,	
			HERB.	NO.	ī	S		5		S		5		.,	

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10 Ş 60 100 100 100 (40) TARTARY SOYBEAN RICE 9 3 ş 20 15 3 9 BUCKWHEAT 94 34 % PLANT INHIBITION AND % SAFENING EFFECT ( ) (40) 15 25 20 Ş 25 15 75 (80) (80) PIGWEED CORN 3 Table 2 (continued) 25 0 'n REDROOT M WO 80 80 9 35 90 65 80 90 (12) 9 70 95 65 90 읓 30 20 32 SORGHUM WHEAT (38) 70 95 60 45 (27) 3 GRAIN M MO 35 (86) 35 S RATE 40 8.96 8.96 8.96 8.96 8.96 0.56 ANTI-DOTE NO. 11 1 11 H 11 12 45 RATE 0.14 0.14 0.56 0.56 0.56 0.03 50 HERB. ۶ ا Ś Ŋ S S Ŋ ~

5 10 ş TARTARY SOYBEAN RICE 3 ş 15 3 BUCKWHEAT ş % PLANT INHIBITION AND % SAFENING EFFECT ( ) 40 20 10 25 (20) (09) (20) 50 50 50 50 20 3 20 ş 80 25 65 80 80 80 10 25 (09) (19) 9 9 PIGWEED CORN 3 Table 2 (continued) 85 25 25 REDROOT Ş 100 97 100 90 65 65 100 90 90 90 15 35 (88) 3 95 95 30 ş 45 45 (100) 40 97 90 97 25 92 SORGHUM WHEAT (88) (67) 8 15 3 0 GRAIN M MO (100) 95 95 35 10 35 50 95 95 20 43 (24) (72) (48) (79) 9 35 20 0 RATE 40 2.24 2.24 8.96 8.96 0.56 0.56 ANTI-DOTE МО. 12 12 12 12 12 12 45 0.14 RATE 0.14 0.03 0.14 0.03 0.14 50 80. ~ 2

5								
10		N WO						
15		OYBEAN F	60 38				77 06	
20	ECT ( )	TARTARY SOBUCKWHEAT W WO 1	9				6	
25	nued) TENING RFF	PIGWEED CORN REDROOT W WO W WO		100 82	50 92 (46)			100 100 100 100 (0)
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	0	75 60	95 98 (4)	45 60 (25)	95 95 75 80 (0) (7)	75 85 (12)	100 100
35	T LANT INHIBI	SORGHUM WHEAT GRAIN W WO W W				(9)		
40	<b>≯</b> €	RATE	0.56	0.56	0.56	0.56	0.56	0.56
45		ANTI-DOTE	12	12	12	12	12	12
50		RATE	0.14	0.28	0.28	0.56	0.56	1.12
		HERB.	7	8	8	7	61	8

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			60 38			
20	FFECT ( )		0					
25	Table 2 (continued)	PIGWEED CORN REDROOT W WO W WO	70 95 100 (5)	35 (29)	09	98 95 82 (4)	60 95 92	80
30	Table 2 (continued)	_	80	50 92 25 (46)	80	95	85	95 95 85 (0)
35	T PLANT INHIBI	SORGHUM WHEAT GRAIN W WO W W		(7)				85 95 9 (11)
40	**	RATE	0.56	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	12	12	12	12	12	12
		RATE	1.12	0.14	0.14	0.28	0.28	0.56
50		HERB.	7	<b>8</b> .	8	8	8	7

5									
10		CE	M WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT	94 34	60 <i>77</i> (23)			10 38 (74)		
20	ECT ( )	TARTARY SOBUCKWHEAT	W WO				-		
25	Table 2 (continued)	PIGWEED CORN REDROOT	W WO		95 100 100 100 (5) (0)	100 100 (0)			95 82
	Table 2 (continued) ITION AND % SAFENIN		0M M	95 85	95 100 (5)	100 70	95 60	20 35 (43)	100 98
30	Table	SORGHUM WHEAT GRAIN	044 A4 0.					25 92 (73)	
35	PLANT INH	SORGHURGRAIN	W WO	-			r	30 43	
40	<sub>ક</sub> ર		RATE	2.24	2.24	2.24	8.96	8.96	8.96
45		ANTI- DOTE	NO.	12	12	12	12	12	12
			RATE	0.56	1.12	1.12	0.14	0.14	0.28
50		HERB.	NO.	8	8	N	8	8	8

5								
10		RICE W WO						
15	cr ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			60 77 (23)			
20 25	inued) AFENING EFFE	CORN W WO	60 85 92 (8)	80	85	100 100 100 100 (0)	70 100 100 (0)	55 10 10 (100) (0)
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	0	9 06	95 95 85 8 (0)	95 8	100 10	75 7	0 5
35	, PLANT INHIB	SORGHUM WHEAT GRAIN W WO W W		60 95				
40	*	RATE	8.96	8.96	8.96	8.96	8.96	0.56
45		ANTI- DOTE NO.	. 12	12	12	12	12	12
		RATE	0.28	0.56	0.56	1.12	1.12	2.24
50		HERB.	8	8	<b>8</b>	8	4	<b>m</b>

Table   Anticolor   Anticolo	5								
### Table 2 (continued)  ### ANTI-  ANTI-  ANTI-  ANTI-  ANTI-  BOTE  OOTE  HAME  OOTE  ANDI  AN	10		RICE W WO						
### Table 2 (continued)  ### ANTI-  ANTI-  ANTI-  ANTI-  ANTI-  BOTE  OOTE  HAME  OOTE  ANDI  AN	15		7 SOYBEAN						
ANTI- DOTE  RATE NO. RATE  4.48 112 2.24  4.48 112 2.24  4.48 112 8.96  4.48 112 8.96  4.48 112 8.96  0.14 12 0.56	20	FECT ( )							
ANTI- DOTE  RATE NO. RATE  4.48 112 2.24  4.48 112 2.24  4.48 112 8.96  4.48 112 8.96  4.48 112 8.96  0.14 12 0.56	25	.inued) AFENING EI	EED CORNOOT		5 (5	15		09	ن. ن
ANTI- DOTE  RATE NO. RATE  4.48 112 2.24  4.48 112 2.24  4.48 112 8.96  4.48 112 8.96  4.48 112 8.96  0.14 12 0.56	<i>30</i>	ble 2 (cont ION AND % S	0		20 5				98
ANTI- DOTE  RATE NO. RATE  4.48 112 2.24  4.48 112 2.24  4.48 112 8.96  4.48 112 8.96  4.48 112 8.96  0.14 12 0.56	35	Tal LANT INHIBIT:	SORGHUM WI GRAIN W WO V						82
RATE 4.48 4.48 4.48 0.14	40	<b>8€</b>	RATE	0.56	2.24	2.24	8.96	8.96	0.56
	45		ANTI- DOTE NO.	12	12	12	12	12	12
HERB 3			RATE	4.48	2.24	4.48	2.24	4.48	0.14
	50		HERB.	ო	ო	ო	ო	e	4

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10		BEAN RICE WO W WO			·	7	30 )	
20	FECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				25	30 3(	
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	100 100	70 80 90 90 (13) (0)	5 80 85 97	55 70 (22)	100 73	95 95 (0)
30	Table 2 (	1 WHEAT  W WO	100 100 95 100 100 100 (0) (5) (0)	7	85	ที	Ä	95 98 9
35	PLANT INHI	SORGHUP GRAIN W WO	100 100					95 98
40	<b>26</b>	RATE	0.56	0.56	0.56	0.56	0.56	2.24
45		ANTI- DOTE TE NO.	56 12	56 12	12 12	12 12	24 12	14 12
50		HERB. NO. RATE	4 0.56	4 0.56	4 1.12	4 1.12	4 2.24	4 0.14

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10		I CE W WO						
15		OYBEAN R				30 7	15 30 (50)	
20	FECT ( )							
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	5 100 (5)	80 80 25 90 (0)	70 80 95 97 (13) (3)	85 70	65 73 (11)	100 95
30	Table 2 ( ITION ANI	<b>WHEAT</b> W WO	100 100 95 100 95 100 (0) (5) (5)	<b>~</b>	,-	~	•	(25)
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W W	100 100 (0)					100 98
40	94	RATE	2.24	2.24	2.24	2.24	2.24	8.96
45		ANTI- DOTE NO.	12	12	12	12	12	12
		RATE	0.56	0.56	1.12	1.12	2.24	0.14
50		HERB.	4	4	4	4	4	4

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10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				(100)	65 30	40 28
20	FECT ( )							
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	00	90 2 60 (65)	3 95 97	0	ø.	s 6
30	Table 2 (continued) ITION AND % SAFENIN	0	95 100 100 100 100 100 (5) (0) (0)	95 80	95 80	95 70	85 73	0 85 (100)
	Table IIBITION	WHEE/	(0)					
35	PLANT IN	SORGHUP GRAIN W WO	95 10					
40	ક્શ	RATE	8.96	8.96	8.96	8.96	8.96	0.56
45		ANTI- DOTE NO.	12	12	12	12	12	12
		RATE	0.56	0.56	1.12	1.12	2.24	0.14
50		HERB.	4	4	4	4	4	S

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10		0,8		00		00		
		RICE		95 100 (5)		100 100 (0)		
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		0.	20			
	_	(Y SO) EAT			65			٠
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	TARTARY S BUCKWHEAT W WO						
	EFFEC	0					s (	
25	ed) NING	CORN	0				45 75 (40)	0
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W	35	60 (34)	06	90 (12)		35
30	2 (co AND %	•	20	70	95	80	70 80 (13)	45
	able FION	W WO		40 32		75 95 (22)		
35	T. MHIBIT	SORGHUM WHEAT GRAIN W WO W WC		7		7.		
	INT IN	SOR( GR/						
40	% PL							
		RATE	0.56	0.56	0.56	0.56	0.56	2.24
<b>45</b>		ANTI- DOTE NO.	12	12	12	12	12	12
~								
		RATE	0.14	0.14	0.56	0.56	0.56	0.14
50		HERB. NO.	ro.	S.	ιΩ	10	10	22
		HEN	u)	vi	u)	νn	S	L)

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10		RICE W WO		95 100 (5)			100 100	
15	_	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	60 28		40 50 (20)			10 28 (65)
20	EFFECT (	Q				S (		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W	70 85 (18)	(0) 09 09	(O)	70 80 55 75 (13) (27)	85 90 (6)	95 85
30	Table 2 ( IIBITION ANI	SORGHUM WHEAT GRAIN W WO W WO	,-	5 32 <b>(</b> (85)	<b>3</b> (		80 95 8	o.
35	PLANT IN	SORGHUP GRAIN W WO			·			
40	<b>&gt;</b> 2	RATE	2.24	2.24	2.24	2.24	2.24	8.96
45		ANTI-DOTE NO.	12	12	12	12	12	12
	•	RATE	0.14	0.14	0.56	0.56	0.56	0.14
50		HERB.	S	ν	ĸ	so.	S	S

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								55
								09
10		<u>چ</u>		100	100			
		RIC		80 100 (20)	100 100 (0)			
		EAN		w		0		
15		SOYB F				20		
	~	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			•	09		
	<u> </u>	CARTA SUCKW W W						
20	FECT							
	EF.	AO AO					75	99
	ed) NING	COR	0				_	38 99 (62)
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W		0	0	0	2	e)
	cont % S	PIGWEED REDROOT W WO	35	(0) 09 09	06	90	80	
	2 (c	0	80		95	95	85	
30	ole	SORGHUM WHEAT GRAIN W WO W WO		20 32 (38)	35 95 (64)			
	Tat BITI	E S		20	35			
	THN	SORGHUP GRAIN W WO						
35	1	SORG GRA W						
	PLA							
	ક્લ	គ						
40		RATE	8.96	8.96	8.96	8.96	8.96	0.56
		1.00		-	~	~	w	J
		ANTI- DOTE NO.	12	12	12	12	12	13
45								
		RATE	0.14	0.14	0.56	0.56	0.56	0.14
			3	9	9	0	0	•
50		HERB.	Ŋ	z.	พ	rJ.	Ŋ	<b></b>
		H Z						

5			70 70 (0)					75 55
10		N RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
20	EFFECT ( )	I TARTARY SC BUCKWHEAT WO W WO N	00					
25	itinued) SAFENING E	PIGWEED CORN REDROOT W WO W W	99 100 (1)	0	15	(0)	75 0 68 (87) (100)	53 99 (47)
30	Table 2 (continued) ITION AND % SAFENIN	0		0	15 25 55 (40)	83 50	10 75 (87)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORCHUM WHEAT GRAIN W WO W W			0 15	45 58 85 (23)		
40	96	RATE	0.56	1.12	1.12	1.12	1.12	2.24
45		ANTI- DOTE NO.	13	13	13	13	13	13
		RATE	0.56	0.03	0.03	0.14	0.14	0.14
50		HERB.	F	H	1		1	

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10		S VELVET LEAF WO W WO	07 07 (0)					60 55
15		OYBEAN RICE						
20	FFECT ( )	TARTARY SI BUCKWHEAT WO W WO	0					
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W W	99 100	0	10 15 (34)	2 20	75 5 68 (100) (93)	73 99 (27)
30	Table 2 (BITION AND	1 WHEAT W WO		0	5 25 10 (80)	80 83 75 (4)	0	
35	PLANT INHI	SORGHUNG GRAIN  W WO			10	10 58 (83)		
40	96	RATE	2.24	87.7	4.48	4.48	4.48	8.96
45		ANTI- DOTE NO.	13	13	13	13	13	13
50		RATE	0.56	0.03	0.03	0.14	0.14	0.14
		HERB.	H	H	-		-	=

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10		VELVET LEAF W WO	07 07 (0)					
		RICE W WO						
15		SOYBEAN T W WO		35 38 (8)			95 77	
20	ect ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		ν,			•	
25	ied) ENING EFFI	CORN F W WO	99 100 (1)					
	(continu	PIGWEED CORN REDROOT W WO W V		10 60 (84)	50 35	95 80	95 85	15 48
30	Table 2 (continued) ITION AND % SAFENIN	WHEAT W WO			90 92	95 95		90 52
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN WO W WO			10 43 (77)	95 95		80 23
40	<b>₹</b>	RATE	8.96	0.56	0.56	0.56	0.56	1.12
45		ANTI- DOTE NO.	13	13	13	13	13	13
50		RATE	0.56	0.14	0.14	0.56	0.56	0.14
		HERB.	1	8	7	8	8	8

5			_						
		ELVET LEAF	3						
		VELVET LEAF	3						
10			0						
,-		9	W <sub>0</sub>						
		RI	3						
		EAN	80			<b>m</b>			
15		OYB	3			38	77		
		TARTARY SOYBEAN RICE BUCKWHEAT				70	90		
	$\mathbb{C}$	TAR	W WO						
20	CT.	TAR	3	,					
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )		0						
	<u>ප</u>	₩.	S.						
	ed) NIN	<u> </u>	3						
25	inu AFE	PIGWEED CORN REDROOT	કુ	10	10	0 0		_	_ ~
	ont % S	PIGWEED REDROOT	94 A	(6)	35	60 (42)	85	80	48
	S E	4 Z		)	9	35	90	95	•
30	Table 2 (continued) ITION AND % SAFENIN	AT	80	95	92			55	52
	abl TIO	WHE	3	95 99 (0)	(E)			100 95	
	IBI	SORGHUM WHEAT GRAIN	0						85
35	INH	SORGHUPGRAIN	M W	(0)	43			95	23
	Ĭ	SO	3	95	35			95	25
	PLA						•	O1	
	<b>ક</b> શ્		ωì						
40			RATE	1.12	2.24	2.24	2.24	2.24	4.48
				=	7	8	8	7	4
		ANTI- DOTE	NO.	13	e	m	<b>m</b>	<b>m</b>	•
45		A S	Ż	H	13	13	13	13	13
			កា	9	<b>4</b>	s <del>t</del>	10		
			RATE	0.56	0.14	0.14	0.56	0.56	0.14
50				<del>-</del>	_	_	_	<b>.</b>	9
30		HERB.	NO.	7	7	7	7	8	8
		Ħ	Ż	· -	••	••	••	•4	•

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		VELVET LEAF W WO						0, 0
		VEL						70 70 (0)
10		χ <sub>0</sub>						•
		RICE						
		SEAN WO		38			7	
15		SOYB T		45 3			85 77	
	_	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		4			∞	
20	) E	rart. Bucki W						
	FFEC	. OM						^
	) NG E	ORN W W						8 (100)
25	Table 2 (continued) ITION AND % SAFENIN	J						0
	ontiu 6 SA	PIGWEED REDROOT W WO	95	60	35 (100)	80	10 85 (89)	
	) ; ( (S		95	45	•	07	01	
30	le 2 ON A	EAT	(0)		(90)	(0)		
	Tab BITI	WHE	95		21	95		
35	INHI	SORGHUM WHEAT GRAIN W WO W W	95		(100)	95		
3.5	Table 2 (continued)	SOS	95 95		- C	65		
	PLA							
40	>€	RATE	4.48	8.96	96	96	96	99
			4	<b>∞</b>	8.96	8.96	8.96	0.56
		ANTI- DOTE NO.	13	13	13	13	13	13
45		<b>4 7</b> ~	•	-	-	-	-	
		RATE	0.56	0.14	0.14	0.56	0.56	0.14
			0	0	0	0	0	0
50		HERB.	7	7	8	8	7	4
		H ~						

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		VELVET LEAF W WO	80 85					70 70 (0)
10		RICE W WO	-					,
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		0 7 (100)	0 30 (100)			
20	FECT ( )							
25	nued) ENING EFI	PIGWEED CORN REDROOT W WO W WO	88 97 (10)			0 12 (100)	75 53	0 8 (100)
	Table 2 (continued) ITION AND % SAFENIN			07 07 (0)	70 73 (5)	15 40	70 65	
30	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO						
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUN GRAIN W WO						
40		RATE	0.56	0.56	0.56	1:12	1.12	2.24
45		ANTI- DOTE NO.	13	13	13	13	13	13
50		RATE	0.56	1.12	2.24	0.14	0.56	0.14
<b>5</b> 0		HERB.	4	4	4	4	4	4

5		£ 0					
		VELVET LEAF W WO	85 85 (0)				
10		RICE W WO	w				
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		7 (100)	40 30		
20	ect ( )	TARTARY SOBUCKWHEAT		0	4		
25	ed) NING EFFI	CORN W WO	43 97 (56)			0 12 (100)	30 53 (44)
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W		60 70 (15)	100 73	45 40	75 65
30	Table 2 ITION AN	WHEAT W WO					
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W					
40	<b>3</b> 4	RATE	2.24	2.24	2.24	4.48	87.7
45		ANTI- DOTE NO.	13	13	13	13	13
		RATE	0.56	1.12	2.24	0.14	0.56
. 50		HERB.	4	4	4	4	4

5										
10 ·		VELVET LEAF		75 70	75 85 (12)					
		N RICE	34						(0)	
15		TARTARY SOYBEAN RICE BUCKWHEAT	M MO			20 7	35 30			0 28 (100)
20	ECT ()	TARTARY SOBUCKWHEAT	W WO							J
25	ıed) INING EFF	CORN	W WO	(100)	8 97 (92)			0		
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT	W WO		-	80 70	90 73	0 32 07	09 08	80 85 (6)
30	Table 2 ITION AN	WHEAT	W WO			w	Si .	4	35 32 8	∞
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN	0м м						ਲ	
40	34		RATE	8.96	8.96	8.96	8.96	0.56	0.56	0.56
45		ANT1- DOTE	NO.	13	13	13	13	13	13	13
			RATE	0.14	0.56	1.12	2.24	0.14	0.14	0.14
50		HERB.	NO.	4	4	4	<b>4</b>	ស	'n	'n

5									
		VELVET LEAF	M M						
10			M WO	100 100					80 100 (20)
15		TARTARY SOYBEAN RICE BUCKWHEAT	W W		30 50			80 28	~
20	FECT ( )	TARTARY SOBUCKWHEAT	M WO						
25	Table 2 (continued)	PIGWEED CORN REDROOT	WO W WO		9	30 75	0	10.0	0 6
30	Table 2 (continued) ITION AND % SAFENIN		WO W WO	(37)	(0) 06 06	60 80 (25)	35 35	60 85	32 0 60 (100)
35	Tabl INHIBITIO	SORGHUM WHEAT GRAIN	M NO M	60 95					20
40	% PLANT	SO .	RATE	9	<b>9</b>	v	4	4	4
40			RA	0.56	0.56	0.56	2.24	2.24	2.24
45		ANTI- DOTE	NO.	13	13	13	13	13	13
			RATE	0.56	0.56	0.56	0.14	0.14	0.14
50		HERB.	NO.	Ŋ	'n	ĸ	ĸ	ĸ	ស

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10						•		
		RICE W WO		100 100		75 100 (25)		
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		ĭ	45 50 (10)	ï.		60 28
20	FECT ( )				•			
25	nued) FENING EF	PIGWEED CORN REDROOT W WO W WO	0 75 (100)				0	
30	Table 2 (continued) ITION AND % SAFENIN	_	35 80 0 (57)	85 90 (6)	(0) 06 06	35 60 (42)	55 35	70 85 (18)
	Table :	SORGHUM WHEAT GRAIN W WO W WO		70 95 (27)		10 32 (69)		
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUR GRAIN W WO						
40	<b>ક</b> થ	RATE	2.24	2.24	2.24	8.96	8.96	8.96
45		ANTI- DOTE NO.	13	13	13	13	13	13
		RATE	0.56	0.56	0.56	0.14	0.14	0.14
50		HERB. NO.	50	Ŋ	s	'n	'n	Ŋ

5									
		ET	8			•			
		VELVET LEAF	3						
10		<b>-</b>	•	•					
,,,		ម្ព	8	100 100					
		RIC	3	80					
		SAN	9	_					
15		OYBI	3			20			
		Y S				65			
	$\mathbb{C}$	TARTARY SOYBEAN RICE BUCKWHEAT	8				25	50	25
20	E)	TAR	3				10 25 (60)	25 50 (50)	20 25 (20)
	344		W0						
	<u>မ</u>	R.			75 (100)		20 25 (20)	80	25 (40)
25	led)	8	3		•		20	90	15 25 (40)
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	M WO	06		06	65	06	65
	Con %	PIG	3		70 80 (13)	95			
	2 ( AND		0	95	7	6	80	95	95
30	le ON	EAT	3	95			45 (100)	95 97 (3)	45 (100)
	Tab IITI	<b>X</b>	3	55			_	95	•
	HIR	SORGHUM WHEAT GRAIN	2				35 (		
35	Ã	SORGHUNGER	<b>8</b>				° 65	100 95	35 (86)
	AMI	S					0	10	Ŋ
	, PI								
40	~		RATE	9	9	96	99	9	54
			2	8.96	8.96	8.96	0.56	0.56	2.24
		w							
45		ANTI- DOTE	NO.	13	13	13	14	14	14
₩.		-							
			RATE	0.56	0.56	0.56	0.03	0.14	0.03
			젒	0	0	0	0	0	0
50	•	ë.	_•						
		HERB.	NO.	Ŋ	'n	S	-	-	-

5		VELVET LEAF W WO						
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					10 38 (74)	
20	FECT ( )		40 50 (20)	10 25 (60)	40 50 (20)			
25	ued) ENING EF)	PIGWEED CORN REDROOT W WO W WO	80 80	10 25 (60)	50 80			95 82
	Table 2 (continued) ITION AND % SAFENIN		95 90	100 65	100 90	20 35 (43)	20 60 (67)	100 98
30	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO	90 97	(1001)	25 97 (75)	70 92 (24)		
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUR GRAIN W WO	60 95 (37)	10 35	35 95	0 43		
40	<b>5</b> €	RATE	2.24	8.96	8.96	0.56	0.56	95.0
45		ANTI- DOTE NO.	14	14	14	14	14	14
		RATE	0.14	0.03	0.14	0.14	0.14	0.28
50		HERB.	Ħ	1	r	7	7	7

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		80 77				
20	FECT ( )					_		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	60 35 92	S	80	100 100 100 100 (0)	70 100 100 (0)	35
30	Table 2 (continued) ITION AND % SAFENIN	0	(0)	100 85	95 65 80	100 10	85	75
35	Tabl INHIBITIO	SORGHUM WHEAT GRAIN W WO W W			) (0) (0)			43 70
35	% PLANT							65
40		RATE	0.56	0.56	0.56	0.56	0.56	2.24
45		ANTI-DOTE NO.	14	14	14	14	14	14
50		RATE	0.28	0.56	0.56	1.12	1.12	0.14
50		HERB.	2	7	84	74	8	7

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		H.	. ş							
		VELVET	W WO							
		Σ.								
10		ங	94							
		RIC	3							
		A	WO							
15		YBE	. 3≊ 3≊	38 (87)				77		
		TARTARY SOYBEAN RICE	¥ .	ر م				95		
	0	rar	8						<u> </u>	
20	£	TARTARY S	] 2 3×							
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	•							_	_
	_ <u>5</u>	RN	OM M		82	92			100 100 100	100
25	red)	8			100 82	95			100	95 (5
23	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN	<b>§</b>	9 0	<b>∞</b>	09	3)	2	00	0/
	cont	916 104	<b>A</b>	10 60 (84)	100 98			. 85		
	2 (			25	10	85	02	90	95	95
30	oN ON	SORGHUM WHEAT	W				95			
	Tab	¥	3				95			
	HIB		0,4				<b>:</b> O			
35	Ä	SORGHU	OM M				95			
	EAN.	01					95			
	24 E									
40	•		RATE	77	77	4	7	4	প্র	4
			2	2.24	2.24	2.24	2.24	2.24	2.24	2.24
		<u> </u>								
		ANTI-	NO.	14	14	14	14	14	14	14
45				_						
			RATE	0.14	0.28	0.28	0.56	0.56	1.12	1.12
			<b>14</b>	9	0	0	. •	0	-	-
50	•	HERR	NO.	7	8	61	01			
		19	ž	• •	"	7	7	7	8	7

5								
10		VELVET LEAF W WO						
		RICE W WO						
15		SOYBEAN T W WO	20 38 (48)					85 77
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	7					80
25	ied) ENING EFF	CORN V			95 82	60 92 (35)		
20	Table 2 (continued)	PIGWEED CORN REDROOT W WO W	100 60	90 35	100 98	95 60	95 80	80 85
30	Table 2 SITION A	SORGHUM WHEAT GRAIN W WO W WO		75 92 (19)			(0)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUP GRAIN W WO		85 43			95 95	
40	<b>≯</b> ₹	RATE	8.96	8.96	8.96	8.96	8.96	8.96
45		ANTI- DOTE NO.	14	14	14	14	14	14
		RATE	0.14	0.14	0.28	0.28	0.56	0.56
50		HERB.	8	N	8	И	N	М

5									
10		ICE	w wo						
15		TARTARY SOYBEAN RICE BUCKWHEAT	M WO						
20	FECT ( )	TARTARY S BUCKWHEAT	A W						
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	W WO W	100 100 100 100 (0) (0)	; 70 95 100 (5)	(55) (50)	(73) (50)	55 10 10 (0)	55 5 40 (88)
30	able 2 (		W 100	21	95	25	15	06	70
35	T PLANT INHIBI	SORGHUM WHEAT GRAIN	0%						
40	38		RATE	8.96	8.96	0.56	0.56	2.24	2.24
_		ANTI-	NO.	14	14	14	14	14	14
<b>4</b> 5			RATE	1.12	1.12	2.24	4.48	2.24	4.48
50		HERB.	NO.	8	81	m	n	ო	ო

5							
		VELVET LEAF W WO					
		VELV LEA					
10		9					
		RICE W					
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					
		SOYI					
	C	TARTARY SOBUCKWHEAT					
20	ig Eg	TAR1 BUCK W					
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	9	10	40			0 0
25	d) IING	COR	3	۳			(0)
	inue	PIGWEED CORN REDROOT W WO W V	55 5	55 5	ñ	00	80
	Table 2 (continued)	PIGWEED REDROOT W WO	90 5	90 5	100 95	100 100 100 100 95 100 (0) (0) (5)	85 8
30	2 ( ANE	WO	φı	54		6 00	α0
	able	SORGHUM WHEAT GRAIN W WO W W			100 98	(0)	
0.5	T HIBI	HUM IN WO				00 1	
35	r E	SORGHUM GRAIN W WO			100 98	(0)	
	PLAN				<b>~</b>	-	
40	8-6	RATE	9	<b>v</b> o	9	9	9
		R	8.96	8.96	0.56	0.56	0.56
		ANTI- DOTE NO.	14	14	14	14	14
45		DO N	-	ra .	м	<b>p=1</b>	1
		RATE	2.24	4.48	0.14	0.56	0.56
50			7	4	0	0	0
		HERB.	ო	e	4	4	4
		#					

5							
10		VELVET LEAF W WO					
		RICE W WO					
15		SOYBEAN F		^	30 (100)		
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		10	0		
25	nued) ŒNING EFF	PIGWEED CORN REDROOT W WO W WO	95 97 (3)				75 90
30	Table 2 (continued)		95 80	55 70 (22)	70 73	75 98 90 95 (24) (6)	90 80
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WC				95 98 75 98 (4) (24)	
40	<u>લ</u> *	RATE	0.56	0.56	0.56	2.24	2.24
45		ANTI- DOTE NO.	. 41	14	14	14	14
50		RATE	1.12	1.12	2.24	0.14	0.56
		HERB.	4	4	4	4	4

5							
10		VICE W WO					
15		OYBEAN F			20 7	30 30	
20	FECT ( )					ν,	
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO		90 97			
30	Table 2 (continued) ITION AND % SAFENIN	0	100 100 100 100 95 100 (0) (0) (5)	85 80	07 07 (0)	70 73 (5)	100 95
	Table ;	SORGHUM WHEAT GRAIN W WO W WO	0 100 100				95 98 (4)
35	LANT INH:	SORGHUN GRAIN W WO	100 100				100 98
40	94 Di	RATE	2.24	2.24	2.24	2.24	8.96
45		ANTI- DOTE NO.	14	14	14	14	14
50		RATE	0.56	1.12	1.12	2.24	0.14
		ZRB.	4	4	4	4	4

5							
10		VELVET LEAF					
45		BEAN RICE WO W WO			~		
15	^	SOYI AT		10 7	0 30 (100)		
20	EFFECT (	Ş	۲ .				0.5
25	tinued) SAFENING	CORU	80 95 97	8 G	ရ	2	0 75 90 (17)
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	_	95 8	55 70 (22)	70 73 (5)	98 90 95	90 80
35	Tab] INHIBITIC	SORGHUM WHEAT GRAIN W WO W WC				98 75 98 (4)	
40	% PLANT					95 98	
**		RATE	0.56	0.56	0.56	2.24	2.24
45		ANTI- DOTE	14	14	14	14	14
50		3. RATE	1.12	1.12	2.24	0.14	0.56
		HERB.	4	4	4	4	4

5							
10		RICE W WO					
15		SOYBEAN T W WO			20 7	30 30	
20	FECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			8	m	
25	inued) AFENING EFI	PIGWEED CORN REDROOT W WO W WO	00	0 90 97 (8)	0	en en	ស
30	Table 2 (continued)	0	100 100 100 100 95 100 (0) (0) (5)	85 80	70 70 (0)	70 73 (5)	95 98 100 95 (4)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	Sorchum wheat Grain W wo w w	100 100 100 (0)				100 98 95
40	% PL	RATE	2.24	2.24	2.24	2.24	8.96
45		ANTI- DOTE NO.	14	14	14	14	14
50		RATE	0.56	1.12	1.12	2.24	0.14
		HERB. NO.	4	4	7	4	4

5								
		TET VF WO						
		VELVET LEAF W WO						
10		S.						
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
		EAN I					_	
15		OYBE			7		30	
	_	TARTARY SOBUCKWHEAT			10		45	
	0	ARTARN UCKWHE W WO						
20	FECT							
	EE	80 80		(23)		97		
	ed) NING	COR ≥		70 90 (23)		.6 36 (3)		0
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W	00	80	70	08	73	35 (
	cont	PIGWEED REDROOT W WO	100 100 100 100 100 100 (0)	95 8	75 7	95 8	7 06	45 3
30	2 ( AND	•	00 1	6	7	6	O)	4
	ble TON	SORGHUM WHEAT GRAIN W WO W W	00 1( (0)					
	Te IBI	A N O	0 10					
35	IN	SORGHUP GRAIN W WO	(0)					
	ANT	SS O	100					
	F PI							
40	•	RATE	8.96	8.96	8.96	8.96	8.96	0.56
			ထံ	ထ်	<b>&amp;</b>	ထံ	œ.	•
		ANTI- DOTE NO.	14	14	14	14	14	14
45		<b>&amp;</b> X ~	-	-				
		RATE	0.56	0.56	1.12	1.12	2.24	0.14
		22	0	o	H	H	6	ó
50		HERB.	7	4	4	4	4	ις.
		H			-	-		

5		VELVET LEAF W WO						
10		RICE W WO		95 100 (5)		100 100 (0)		
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	20 28 (29)		40 50			
20	FFECT ( )	TARTARY SC BUCKWHEAT WO W WO 1					. 6	
25	inued) AFENING E	CORN ¥	a C	ō	90	<b>9</b> _	30 0 75 3) (100)	35 0
30	Table 2 (continued) ITION AND % SAFENIN	0	55 85 (36)	32 70 60	80 90	95 90 90	70 80 (13)	20
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		30 32 (7)		) 36		
40	% PLANT	RATE	0.56	0.56	0.56	0.56	0.56	2.24
		ANTI- DOTE NO. F	14 0	14 0	14 0	14 0	14 0	14 2
45		AN DO RATE N	0.14 1	0.14 1	0.56	0.56	0.56	0.14
50		HERB. NO. RA	5.00.	.0	5.0	0	in O	
		H						

5								
		VELVET LEAF W WO						
10		RICE W WO	100 100			100 100		
15		SOYBEAN T W WO	•	80 28	30 50	1		
20	ct ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		80	m			
	ed) VING EFF	CORN W WO					25 75 (67)	
25	continue	PIGWEED CORN REDROOT W WO W !	55 60	50 85 (42)	(0)	95 90	(20)	5 35 0
30	Table 2 (continued) ITION AND % SAFENIN	0	10 32 5	ν	6	55 95 9. (43)	4	92
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W				เก๋		
40	96	RATE	2.24	2.24	2.24	2.24	2.24	8.96
45		ANTI- DOTE NO.	14	14	14	14	14	14
		RATE	0.14	0.14	0.56	0.56	0.56	0.14
50		HERB. NO.	ស	ហ	'n	N.	'n	ĸ

5 10 ş 90 100 100 100 (10) 9 TARTARY SOYBEAN RICE % 34 28 (40) 30 50 15 55 BUCKWHEAT A Wo % PLANT INHIBITION AND % SAFENING EFFECT ( ) (09) 25 10 25 20 (100) M W (80) 15 75 PIGWEED CORN 0 Table 2 (continued) 25 REDROOT W W 70 80 65 90 90 (13) 09 09 85 (12) 80 90 9 90 95 Ş 32 85 95 45 30 SORGHUN WHEAT (11) 3 20 35 0A A GRAIN 10 35 (72) 35 RATE 8.96 0.56 8.96 8.96 8.96 8.96 40 ANTI-DOTE 8 14 14 14 14 15 14 45 0.14 0.56 0.56 0.03 RATE 0.14 0.56 50 HERB. М В S 2 S S S -

5		VELVET LEAF	W WO						
10		AN RICE	M WO						
15	^	TARTARY SOYBEAN RICE BUCKWHEAT	ON M OA	•					25 38 (35)
20	SFFECT (	TART! BUCK	WO W WO	(20)	15 25 (40)	35 50 (30)	10 25 (60)	40 50	
	.nued) FENING B	PIGWEED CORN REDROOT	3	85 80	25 25 (0)	90 80	20 25 (20)	85 80	
25	Table 2 (continued) ITION AND % SAFENIN		OM M OM	95 90	95 65	95 90	90 65	(0)	70 60
30	Table IBITION	SORGHUM WHEAT GRAIN	3	75 97 (23)	0 45	100 97	0 45	0 97	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUR	OM 34	80 95	0 35 (100)	90 95	0 35 (100)	65 95 (32)	
40	<b>8</b> €	1	RATE	0.56	2.24	2.24	8.96	8.96	0.56
		ANTI- DOTE	NO.	15	15	15	15	15	15
45			RATE	0.14	0.03	0.14	0.03	0.14	0.14
50		HERB.	NO.		1	F	Ħ	<b>r</b>	7

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ş 90 100 100 100 10 (10) 9 TARTARY SOYBEAN RICE 3 £ 28 30 50 (40) 15 3 55 BUCKWHEAT M MO % PLANT INHIBITION AND % SAFENING EFFECT ( ) (09) 25 10 25 20 £ (100) 15 75 (80) PIGWEED CORN 3 Table 2 (continued) 0 25 REDROOT M WO 70 80 09 09 65 (13) 90 85 90 90 80 90 (12) 9 9 95 Ş 32 85 95 (11) 50 45 SORGHUM WHEAT 30 32 GRAIN ₩ ₩ 10 35 (72) 35 RATE 8.96 8.96 8.96 8.96 8.96 0.56 40 DOTE 14 14 14 15 14 14 45 0.03 RATE 0.14 0.14 0.56 0.56 0.56 50 HERB. S S S S S

5								
		VELVET LEAF W WO						
10		0,4						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						25 38 (35)
20	FECT ( )		40 50 (20)	15 25 (40)	35 50 (30)	10 25 (60)	40 50	
25	ued) ENING EF)	PIGWEED CORN REDROOT W WO W WO	85 80	25 25 (0)	90 80	20 25 (20)	85 80	
	Table 2 (continued) ITION AND % SAFENIN		95 90	95 65	95 90	90 65	(0)	09 02
30	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO	75 97 (23)	0 45 (100)	100 97	(100)	0 97	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUP GRAIN W WO	80 95	0 35 (100)	90 95	0 35 (100)	65 95 (32)	
40	ૠ	RATE	0.56	2.24	2.24	8.96	8,96	0.56
45		ANTI- DOTE NO.	15	15	15	15	15	15
		RATE	0.14	0.03	0.14	0.03	0.14	0.14
50		HERB.	-	-		H	-	ત

5								
10		я 80						
		RICI *						
15		YBEAN WO				77		
		Y SOY EAT				80		
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
	EFF	Q Q		82	95			100
	led) INING	PIGWEED CORN REDROOT W WO W 1	•	100 82	85 92 (8)			100 100 100 100 (0)
25	ntinu SAFE	PIGWEED REDROOT W WO	(72)	100 98	09	85	80 (7)	0 100
	(Co		10 35	100	80	85	75	100
30	Table 2 (continued)	WEAT V WO	(30)				(0)	
	Tal IBIT:	F Z C	65				95	
35	ENI	SORGHUM WHEAT GRAIN W WO W W	10 43 (77)				80 95	
	PLANT	Ø	10				80	
40	3-6	RATE	99	99	99	99	26	99
			0.56	0.56	0.56	0.56	0.56	0.56
		ANTI- DOTE NO.	15	15	15	15	15	15
45			4	<b>60</b>	<b>20</b>	vo	<b>v</b>	8
		RATE	0.14	0.28	0.28	0.56	0.56	1.12
50		HERB.	8	7	8	ч	N	8

5					
10		VELVET LEAF W WO			
		RICE W WO			
15		SOYBEAN T W WO	50 38		
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W V	ÿ		
25	ned) ENING EFF	PIGWEED CORN REDROOT W WO W WO 5 70 100 100	(o)	75 82	90 92
	Table 2 (continued)	7	10 60 (84)	85 35	50 60 (17) 85 80
30	Table 2 ITION A	WHEAT W WO		95 92	95 95
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		45 43	95 95 9
40	<b>₽</b> €	RATE 0.56	2.24	2.24	2.24
45		ANTI-DOTE NO.	15	15	15
		RATE	0.14	0.14	0.28
50		HERB. NO.	8	и и	0 0

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5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	95 77			55 38		
20	IFFECT ( )	Ş		00	0			
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W W	90 85	100 100 100 100 (0) (0)	50 70 100 100 (29) (0)	75 60	90 35	95 98 95 82 (4)
30	Table 2 ( NHIBITION AND	SHUM WHEAT AIN WO W WO	6	Г	Ю	7	95 92	6
35	PLANT II	SOR( GRA					10 43	
40	94	ANTI- DOTE NO. RATE	15 2.24	15 2.24	15 2.24	15 8.96	15 8.96	15 8.96
45		, I RATE	0.56	1.12	1.12	0.14	0.14	0.28
50		HERB.	7	8	8	7	8	64

5		VELVET LEAF W WO						
10		RICE W WO						
15	cr ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W W		95 77				
20	<b>अ</b> ज्ज	Q	2			00	00	0 0
25 30 35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT PIGWEED CORN GRAIN REDROOT W WO W WO W W	70 60 100 92	. 88 06	95 95 95 90 80 (0) (0)	45 70 100 100 (36) (0)	100 100 100 100 100 (0)	60 55 5 10 (50)
40	**	RATE	8.96	8.96	8.96	8.96	8.96	0.56
		ANTI- DOTE NO.	15	15	15	15	15	15
45		RATE	0.28	0.56	0.56	1.12	1.12	2.24
50		HERB.	8	8	7	84	8	ო

5								
		VELVET LEAF W WO						
10		<b>₽</b>						
		RIC						
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W N						
15		SOYI						
	_	TARTARY SO BUCKWHEAT W WO O						
	) H	ART. SUCK						
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	_ %				$\overline{}$		
	SG E	ORN W W	15 40 (63)	10	2 <b>0</b> 40 (50)	10 (100)	10 40 (75)	•
	red (ENI)	9 6		25	20	0	10	
25	ntin SAF	REDROOT  W WO W I	55	10 55 (82)	(28)	55 (28)	50 55 (10)	95
	ပို့ (၁)		70	10	40 55 (28)	40 55 (28)	50	100 95
	Table 2 (continued) ITION AND % SAFENIN	'AT						86
30	Tabl ITIO	3						( <del>)</del> )
	HIB	SORGHUM WHEAT GRAIN W WO W W						
	ñ	SORC GRA						100 98
35	PLAN							Ħ
	94	FI				_		_
		RATE	0.56	2.24	2.24	8.96	8.96	0.56
40		1	_			_	-	
		ANTI- DOTE NO.	15	15	15	15	15	15
			m	ST.	æ	J.	æ	
45		RATE	4.48	2.24	4.48	2.24	4.48	0.14
50		HERB.	ო	က	က	က	e	4
50		-						

5									
10			0 <u>M</u>						
		RICE	3						
		EAN	N <sub>O</sub>				6	8 0	
15		SOYB T	3				7 (100)	30	
		ARY WHEA	ο				0	Ŋ	
20		TARTARY SOYBEAN RICE BUCKWHEAT	M WO						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )		WO	06		7			
	ed)	PIGWEED CORN REDROOT	3	95 9		100 97			
25	Table 2 (continued) ITION AND % SAFENIN	EED OOT	<b>%</b>				8 0	m	ю
	cont % S	PIGWEED REDROOT	W W	55 80 (32)	(0)	90 80	55 70 (22)	75 73	5 95 (0)
30	: 2 (	H	WO	ហ	00 1	6	Ŋ	7.	8 95
	able	SORGHUM WHEAT GRAIN	3		(0)				95 98 (4)
	THIBI	HUH	MO		00 1				
35	E I	SORGHUN	M WO		95 100 100 100 100 100 (5) (0) (0)				100 98
	PLAN				o)				Ä
40	3-6		RATE	9	9	9	•	9	<b>.</b>
			₩.	0.56	0.56	0.56	0.56	0.56	2.24
		ANTI-	NO.	15	15	15	15	ю	ю
45		<b>&amp;</b> 8	Z.	-	-	H	=	15	15
			RATE	0.56	0.56	1.12	1.12	2.24	0.14
50			æ	0	0	1	<b>=</b>	7	0
50		HERB.	NO.	4	4	4	4	4	4
		==							

5		VELVET LEAF W WO					
10		RICE W WO					
15	•	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				0 7 (100)	20 30 (34)
20	EFFECT (	Q		6	21		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W W	100	80 40 90 (50) (56)	65 80 95 97 (19) (3)	85 70	55 73 (25)
30	[able 2 (	WHEAT W WO	(0)	07	•	•	
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W WO	100 100 100 95 (0) (0)				
40	8€	RATE	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	15	15	15	15	15
		RATE	0.56	0.56	1.12	1.12	2.24
50		HERB.	4	4	4	4	7

5								
		VELVET LEAF W WO						
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					7 (100)	30 (84)
20	ict ( )	TARTARY SO BUCKWHEAT W WO 1					0	Ŋ
	ed) NING EFFE	CORN W WO			80 90 (12)	90 97		
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W N	95 95	(5)	70 80 8	65 80 9	60 70	60 73 (18)
30	Table 2 ITION AN	WHEAT W WO	80 98 ; (19)	(0)	,-	v	<b>v</b>	Φ
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WG	100 98	100 100 100 100 95 100 (0) (0) (5)				
40	98	RATE	8.96	8.96	8.96	8.96	8.96	8.96
		ANTI- DOTE NO.	15	15	15	15	15	15
45		RATE	0.14	0.56	0.56	1.12	1.12	2.24
50		HERB.	4	4	4	4	4	<b>4</b> .

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5 100 100 10 8 95 100 (2) <u>e</u> TARTARY SOYBEAN RICE **≥ %** (53) 50 50 20 28 9 15 BUCKWHEAT W W % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 A WO 10 75 (87) PIGWEED CORN Table 2 (continued) 0 REDROOT 25 M W 55 80 90 60 35 45 85 (48) 15 60 (75) (32)06 06 9 95 SORGHUM WHEAT **£** 30 32 95 95 3 9 30 GRAIN OA A 35 RATE 0.56 0.56 0.56 0.56 0.56 0.56 40 ANTI-DOTE § 15 15 15 15 13 15 45 0.56 0.14 0.14 0.14 0.56 0.56 RATE HERB. NO.

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		VELVET LEAF W WO					
10		RICE W WO	60 100 (40)				100 100
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W 6		40 28			
20	TECT ( )			•			
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO			0	0 75 (100)	
30	Table 2 (continued)	0	2 0 60 (100)	55 85 (36)	20 35 (43)	70 80 (13)	5 70 90
	Table	1 WHE	50 32				80 95
35	PLANT IN	SORGHUP GRAIN W WO					
40	₹	RATE	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	15	15	15	. 22	15
		RATE	0.14	0.14	0.14	0.56	0.56
50		. HERB.	Ŋ	ĸ	ĸ	S	'n

5									
		VELVET LEAF	M WO						
10			WO			0			2
		RICE	3			95 100 (5)			100 100 (0)
40		TARTARY SOYBEAN RICE BUCKWHEAT	WO	•	<b>"</b> 6	6			ĭ
15		SOYBI	3	50 50	28 (100)				
	^	RY S	WO	20	0				
20	) H	TARTARY SC BUCKWHEAT	3						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	н	MO MO						
	NG E	ORIN	3					30 75 (60)	
25	Table 2 (continued)	PIGWEED CORN REDROOT		_		_	0		_
	onti % SA	PIGWEED REDROOT	Ø 3	85 90	82	9	35	80	06
20	2 (c And			85	06	20 .	55	65	95
30	ble	HEAT	M M			20 32 70 (38)			70 95 (27)
	Ta'	X X				70			70
35	IM	SORGHUM WHEAT GRAIN	W W						
	LANT	S C							
	% %		~						
40			RATE	2.24	8.96	8.96	8.96	8.96	8.96
		<u>.</u>		•	~	~	~	~	~
45		ANTI- DOTE	NO.	15	15	15	15	15	15
~~			Ħ	9	4	4	4	9	<b>v</b> g
			RATE	0.56	0.14	0.14	0.14	0.56	0.56
50		e.							
		HERB.	NO.	īΩ	in.	in.	Ŋ	i)	Ŋ

10		RICE	0A A						
15		TARTARY SOYBEAN RICE BUCKWHEAT	M WO	75 50					
20	FECT ( )	TARTARY SO BUCKWHEAT	M WO		30 25	(10)	10 25 (60)	35 50 (30)	25 25 (0)
25	ued) ENING EFI	D CORN	W WO		0 25 (100)	75 80 (7)	5 25 (80)	80 80	10 25 (60)
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT	OM M	(0)	95 65	100 90	100 65	95 90	95 65
30	Table 2 BITION A	SORGHUM WHEAT GRAIN	OM A		75 45	95 90 97 100) (8)	55 45	100 97	70 45
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUPGRAIN	W W		55 35	0 95	20 35 (43)	80 95	0 35 (100)
40	96		RATE	8.96	0.56	0.56	2.24	2.24	8.96
45		ANTI- DOTE	NO.	15	16	16	16	16	16
			RATE	0.56	0.03	0.14	0.03	0.14	0.03
50		HERB.	NO.	'n	11	pol .	<b>-</b>	-	-

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10		VELVET LEAF W WO						
15		AN RICE  O W WO						
	•	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			15 38 (61)			95 77
20	EFFECT (	9	80 40 50			7	2 0	
25	inued)	PICWEED CORN REDROOT W WO W	90 85 8	35 58)	09	18 75 82	60 70 92	85
30	Table 2 (continued) ITION AND % SAFENIN	0	95	15	55 6 (9)	100 98	9 02	85 8
35	<pre>rable 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )</pre>	SORGHUM WHEAT GRAIN W WO W W	80 95 90 97 (16) (8)	43 30 92 (100) (68)				
	% PLANT			0				
40		I- E . RATE	8.96	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE TE NO.	14 16	14 16	14 16	28 16	28 16	56 16
50		HERB. NO. RATE	1 0.14	2 0.14	2 0.14	2 0.28	2 0.28	2 0.56
		HEI	••	**	••	••	**	••

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10		9						
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
		EAN					~	
15		OYBI					38	
	0	TARTARY SOBUCKWHEAT					45	
	Ü	ARTARN UCKWHI W WO						
20	FECT							
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	<b>%</b> ₹3		0 100	100			82
	ed) NIN	CO ₃		100	95 1 (5)			100 82
25	tinu SAFE	PIGWEED CORN REDROOT W WO W	80	100 100 100 100 (0) (0)	70	35	09	æ
	, con	PIG REDI W	70 80 (13)	(0)	06	80	9 06	95 9 (4)
	Table 2 (continued) ITION AND % SAFENIN	F. Og	10	r	σ,		Φ,	60
30	able FION	SORGHUM WHEAT GRAIN W WO W W	(0)			(41)		
	Ta	HUM V	95			55		
	INI	SORGHUN GRAIN W WO	95 (0)			25 43 (42)		
35	ANT	N _ L	95			25		
	% FI							
4.5		RATE	0.56	0.56	0.56	2.24	2.24	2.24
40			ó	Ö	Ö	6	5.	6
		ANTI- DOTE NO.	16	16	16	16	16	16
45		<b>&amp;</b> ¤ ~						
40		RATE	0.56	1.12	1.12	0.14	0.14	0.28
		ž.	0	1	1	0	•	0
50		HERB.	2	7	7	7	7	7
		H Z						

5		VELVET LEAF W WO						
·10		N RICE W WO						
15	C	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			95 77			30 38
20	BEFFECT	Ş	92 (19)			100	100	
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W W	80 60 75 92	08 06	100 85	95 100 100 100 (5) (0)	90 70 100 100 (0)	09 96
30	Table 2 BITION AN	SORGHUM WHEAT GRAIN W WO W WO		95 95 (0)			•	-
35	PLANT INHI	SORGHUN GRAIN W WO		(9)				
40	36	RATE	2.24	2.24	2.24	2.24	2.24	8.96
45		ANTI- DOTE NO.	16	16	16	16	16	16
		RATE	0.28	0.56	0.56	1.12	1.12	0.14
50		HERB.	7	8	<b>8</b>	7	7	8

5								
10		VELVET LEAF W WO						
		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W I					95 77	
20	FECT ( )							
25	nued) FENING EFI	PIGWEED CORN REDROOT W WO W WO		95 82	95 92			100 100 100 100 (0)
30	Table 2 (continued) ITION AND % SAFENIN		100 35	95 98	09 06	90 80	90 85	100 100
	Table ?	SORGHUM WHEAT GRAIN W WO W WO	20 92 (79)			95 95		
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUP GRAIN W WO	60 43			95 95		
40	3-6	RATE	8.96	8.96	8.96	96.8	8.96	8.96
45		ANTI- DOTE NO.	16	16	16	16	16	16
		RATE	0.14	0.28	0.28	0.56	0.56	1.12
50		HERB.	64	6	2	84	81	8

10		TARTARY SOYBEAN RICE BUCKWHEAT	W W OM W						
20	FECT ( )	TARTARY SOBUCKWHEAT	W WO						
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	ON M ON M	90 70 100 100 (0)	20 55 0 10 (64) (100)	60 55 10 40 (75)	25 55 10 10 (55) (0)	60 55 55 40	75 55 5 10 (50)
30	TION AN		W WO	6	N	9	8	9	,
35	1 PLANT INHIBI	SORGHUM WHEAT GRAIN	W WO						
40	<b>8</b> €		RATE	8.96	0.56	0.56	2.24	2.24	8.96
45		ANTI- DOTE	NO.	16	16	16	16	16	16
			RATE	1.12	2.24	4.48	2.24	87.7	2.24
50		HERB.	NO.	7	ო	၈	ო	ო	m

5								
10		RICE VELVET LEAF W WO W WO						
15		OYBEAN B						7
20	FECT ( )							35
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	100 55 35 40	95 95 (0)	00 100 (0)	85 80 90 90 (0)	5 80 95 97	65 70 (8)
30	Table 2 ITION AN	WHEAT W WO	-	(6)	(0)	æ	95	39
35	PLANT INHIB	SORGHUM WHEAT GRAIN W WO W W		95 98 9	100 100 100 100 100 100 (0) (0) (0)	-		
40	**	RATE	8.96	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	16	16	16	16	16	16
		RATE	87.7	0.14	0.56	0.56	1.12	1.12
50		HERB.	m	4	4	4	4	4

5		VELVET LEAF W WO						
10		Ş						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	10 30 (67)					25 7
20	EFFECT ( )	Ş			0.0			
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W W	75 73	95 95 (0)	95 80 60 90	5 100	5 80 95 97	. 70
30	Table 2 (	0	7	(14)	6	(0)	95	75
35	1 PLANT INHIBI	SORGHUM WHEAT GRAIN W WO W W		8 86 06		100 100 100 95		
40	9-6	RATE	0.56	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	16	16	16	16	16	16
		RATE	2.24	0.14	0.56	0.56	1.12	1.12
50		HERB.	4	7	4	4	4	4

5									
10		O.							
		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W							
		SEAN WO	9						0.0
15		SOYI AT	35 · 30				2 09		20 30 (34)
	C	TARTARY SI BUCKWHEAT W WO I	(1)				9		Ä
20	ECT	TAR							
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	. A3				96		7.	
	ned) ENING	o cor				6 06		95 97 (3)	
25	Table 2 (continued)	PIGWEED CORN REDROOT W WO W V	73	95	100	80	70	80	73
	% (د ک		90	100 95	100 100 100 100 100 (0) (0) (0)	95	95	95	95
30	le 2 ON A	EAT WO		98	(0)				
	Tab BITI	M WHE		100 98	100				
	INHI	SORGHUM WHEAT GRAIN W WO W W		100 98	(0)				
35	ANT	S 8 3		100	100				
	% I								
40		RATE	2.24	8.96	8.96	8.96	8.96	8.96	8.96
		∺ a .		•	∞	Φ,	∞	œ	∞
		ANTI- DOTE NO.	16	16	16	16	16	91	16
45		RATE	54	0.14	26	99	2	2	4
		\$	2.24	0.	0.5	0.56	1.12	1.12	2.24
50		HERB.	4	4	4	7	4	4	4
•		至 ~							-

5		VELVET LEAF W WO						
		VEI LE						
10		RICE W WO		100 100		100 100 (0)		
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W N			40 28		35 50	
20	FECT ( )							
25	aued) FENING EF	PIGWEED CORN REDROOT W WO W WO	0					(47)
	Table 2 (continued) ITION AND % SAFENIN	0	70 35	(0)	90 85	(0)	(0) 06 06	70 80 (13)
30	Table	SORGHUM WHEAT GRAIN W WO W WO		60 32		95 95		
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUP GRAIN W WO						
40	<b>≯</b> €	RATE	0.56	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	16	16	16	16	16	16
		RATE	0.14	0.14	0.14	0.56	0.56	0.56
50		. HERB.	ស	'n	ĸ	ιν	w	Ŋ

5		VELVET LEAF	0X							
10		N RICE	9 3		100 100 (0)				100 100	
15	( ) 15	TARTARY SOYBEAN RICE BUCKWHEAT	W W W	20 28 (29)			75 50			
20	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	CORN	W W0			0		70 80 35 75 (13) (54)		
<b>25</b>	Table 2 (continued) ITION AND % SAFENIN		MO W WO	85 85 (0)	32 85 60	65 35	(0)	70 80	5 95 90	75 35
30	Table INHIBITION	SORGHUM WHEAT GRAIN	W WO W		60 3				95 95	
35	% PLANT	SS	RATE	4	4	4	4	4	•	۷۵.
40		ANTI- DOTE	NO. RA	16 2.24	16 2.24	16 2.24	16 2.24	16 2.24	16 2.24	16 8.96
45		, ,	RATE	0.14	0.14	0.14	0.56	0.56	0.56	91.0
50		HERB.	NO.	S	'n	พ	νO	vs	ស	'n

5								
		VELVET	<b>3</b> 3∗					
10		N RICE	W WO	(5)	100 100	ê		
15	0	SOYE	MO MO	20 28	(29)	10 50	(80)	s .c
20	FFECT (		3					10 25
	ed) NING El	CORN	O3 <b>3</b>				40 75	(47)
25	continu % SAFE		W W0	95 85	95 90	100 90	7 08 56	95 65 5
30	Table 2 (continued) SITION AND % SAFENIN	4 WHEA	W W0	(54)	90 95 9	99	6	30 45 9
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHURGRAIN	0 <del>x</del>					30 35
40	9-6		RATE 8.96	8.96	8.96	8.96	96.8	0.56
		ANTI- DOTE	NO. 16	16	16	16	16	17
45		8	RATE 0.14	0.14	0.56	0.56	0.56	0.03
50		HERB.	. 5	ស	'n	Ŋ	ιΩ	н

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10 ş TARTARY SOYBEAN RICE 3 Ş 15 3 BUCKWHEAT M WO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 (20) 25 (20) 50 50 (40) (09) 20 50 9 20 25 20 15 Ş 22 80 65 80 (19) 20 80 (80) (19)10 25 (09) (75) PIGWEED CORN 3 Table 2 (continued) 65 Ŋ 25 REDROOT 2 95 95 100 97 100 90 90 65 100 97 100 90 65 35 (72) 95 2 95 85 ટ્ર SORGHUM WHEAT 10 45 30 30 45 (34) 95 97 35 92 (62) 3 3 M M GRAIN 10 35 25 95 (100) (72) 43 (74) 15 35 (88) 40 95 (28) 9 35 0 RATE 0.56 2.24 2.24 8.96 8.96 0.56 40 ANTI-DOTE NO. 17 17 17 17 17 17 45 RATE 0.14 0.03 0.14 0.03 0.14 0.14 · HERB. М В 50 -7

5		VELVET LEAF	0 <b>%</b>						
10		RICE	M M						
15		TARTARY SOYBEAN RICE BUCKWHEAT	W WO	30 38 (22)			80 77		
20	ECT ( )	TARTARY SOBUCKWHEAT	M WO				~		
0_0	ed) NING EFF	CORN	3		100 82	90 92 (3)			100 100
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT	M M	15 60 (75)	100 98	75 60	95 85	(0)	100 100 100 100 (0)
30	Table 2 ITION AN	WHEAT	<b>8</b> 0					95 95	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN	W W					90 95	
40	<b>&gt;</b> 2		RATE	0.56	0.56	0.56	0.56	0.56	0.56
45		ANTI-	NO.	17	17	17	17	17	17
			RATE	0.14	0.28	0.28	0.56	0.56	1.12
50		HERB.	NO.	8	8	7	7	7	7

5								
10		VELVET LEAF W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W WO			30 38 (22)			77 07 (01)
20	FFECT ( )		0					
25	inued) VFENING E	PIGWEED CORN REDROOT W WO W WO	65 70 100 100 (8) (0)			100 82	(3)	
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	1 WHEAT W WO	65 76 (8)	85 92 35 35 (8) (0)	09 06	(6) 86 06	55 60	90 85
35	PLANT INH	SORGHUP GRAIN W WO		5 43				
40	<del>ર</del> ુશ	RATE	0.56	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	17	17	17	17	11	11
		RATE	1.12	0.14	0.14	0.28	0.28	0.56
50		HERB.	И	7	N	8	84	7

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				35 38 (8)		
20	FECT ( )	TARTARY SO BUCKWHEAT W WO				e		
25	ued) ENING EFT	PIGWEED CORN REDROOT W WO W WO		90 100 100 100 (10) (0)	100 100 (0)			95 82
	Table 2 (continued) ITION AND % SAFENIN		75 80	90 100	50 70 (29)	80 60	55 35	95 98 (4)
30	Table 2 EBITION A	SORGHUM WHEAT GRAIN W WO W WO	95 95				85 92 (8)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUF GRAIN W WO	95 95				0 43	
40	94 —	RATE	2.24	2.24	2.24	8.96	8.96	8.96
45		ANTI-DOTE NO.	17	17	17	17	17	17
45		RATE	0.56	1.12	1.12	0.14	0.14	0.28
50		HERB.	74	4	<b>~</b>	8	8	8

5		VELVET LEAF	OM M						
10		RICE	W WO						
15	_	TARTARY SOYBEAN RICE BUCKWHEAT	W W		85 77				
20	FFECT ( )	TARTARY SOBUCKWHEAT	0M M						
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	W W W	80 60 70 92 (24)	. 28 85 (36)	90 80	95 100 100 100 (5) (0)	75 70 95 100 (5)	85 55 10 10 (0)
30	Table 2 IBITION AN	SORGHUM WHEAT GRAIN	0 M M		Ξ,	100 95	66	7	∞
35	PLANT INK	SORGHURGRAIN	W WO			95 95			
40	<b>3</b> €		RATE	8.96	8.96	8.96	8.96	8.96	0.56
		ANTI- DOTE	NO.	11	11	11	11	17	11
45			RATE	0.28	0.56	0.56	1.12	1.12	2.24
50		HERB.	NO.	8	<b>8</b>	8	6	8	ო

5	VETVET	LEAF W WO						
10	RICE	98						
15	SCT ( ) TARTARY SOYREAN RICE	HEAT						
20	FECT (							
	ied) Ening EF	0% A	10 40 (75)	5 10 (50)	10 40 (75)	0 10	10 40 (75)	
25	Table 2 (continued) BITION AND % SAFENING DAMEAT PIGWED CORN	REDROOT W WO	10 55 (82)	10 55 (82)	25 55 (55)	30 55 (46)	75 55	100 95
30	fable 2 ITION AN WHEAT	N W						86 56
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( ) SORGHUM WHEAT PIGWEED CORN TARTAR	GRAIN W WO						100 98 9
40		RATE	0.56	2.24	2.24	8.96	8.96	0.56
	ANTI-	DOTE NO.	17	17	17	17	17	17
45		RATE	4.48	2.24	87.7	2.24	4.48	0.14
50		HERB.	က	ĸ	m	m .	m	4

5								
10		0						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W WO				,	30	
20	FECT ( )					25	57	
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	100	75 80 65 90 (7) (28)	60 80 60 97 (25) (39)	65 70 (8)	65 73 (11)	100 95
30	Table 2 (continued) BITION AND % SAFENIN	1 WHEAT	100 100 100 95 (0) (0)	75	09	65	65	85 98 100
35	PLANT INHI	Sorghur Grain W Wo	100 100					95 98
40	<b>≯</b> €	ANTI- DOTE NO. RATE	0.56	0.56	95.0	0.56	0.56	2.24
45		ANTI- DOTE RATE NO.	0.56 17	0.56 17	1.12 17	1.12 17	2.24 17	0.14 17
50		HERB.	4	4	4	4	4	4
					•			

5								
10		VELVET LEAF W WO						
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				(100)	(100)	
20	ECT ( )	TARTARY SO BUCKWHEAT W WO						
	ed) NING EFF	CORN W WO		0 90 (100)	(23)			
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W W	(0)	70 80 (13)	75 80 75 (7)	07 27	60 73 (18)	100 95
30	Table 2 ITION AN	WHEAT W WO	100 100 100 100 100 (0) (0) (0)					100 98
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO	100 100					95 98 100 98 100 95 (4)
40	<b>8</b> €	RATE	2.24	2.24	2.24	2.24	2.24	8.96
40		ANTI- DOTE NO.	17	71	17	17	17	17
<b>4</b> 5		RATE	0.56	0.56	1.12	1.12	2.24	0.14
50		HERB.	4	4	4	4	4	4

5		VELVET LEAF W WO							
10		RICE W WO						00 100 (0)	
15	0	TARTARY SOYBEAN RICE BUCKWIEAT W WO W WO W N				0 7 (100)	0 30 (100)	-	
20	G EFFE	Ş		5 90 (28)	(13)				
25	Table 2 (continued)	PIGWEED CORN REDROOT W WO W	100 100 (0)	70 80 65	85 80 85	60 70 (15)	60 73 (18)	09 02	
30	Table 2 IBITION A	SORGHUM WHEAT GRAIN W WO W WO	100 100 95 100 100 100 (0) (5) (0)					20 32 (38)	
35	PLANT INH	SORGHUR GRAIN W WO	100 100 (0)						
40		RATE	8.96	8.96	8.96	8.96	8.96	0.56	
		ANTI- DOTE NO.	17	11	17	17	11	11	
45		RATE	0.56	0.56	1.12	1.12	2.24	0.14	
50		HERB.	4	4	4	4	4	η <b>λ</b> . ,	

5								
10		SE WO					100 100	95 100 (5)
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W		45 28	20 50 (60)		100	95 E)
20	FFECT ( )			7	.,			
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W WO	50 35 0	55 85 (36)	06 06	80 80 40 75	(0) 06 06	09 0
30	sble 2 (		ñ	ίń	6	&	95	20 32 70 (38)
35	Ta PLANT INHIBIT	SORGHUM WHEAT GRAIN W WO W WO					\$6 )	72
40	34	RATE	0.56	0.56	0.56	0.56	0.56	2.24
<b>4</b> 5		ANTI- DOTE NO.	17	17	11	11	11	11
		RATE	0.14	0.14	0.56	0.56	0.56	0.14
50		HERB.	ν	v	ល	Ŋ	ហ	ι'n

5								
		VELVET LEAF	<b>≩</b>					
10		Ç	3				100 100	95 100 (5)
15		OX.	60 28		65 50		Ā	66
20	FECT ( )		<b>2</b> <b>3</b>		C			
25	ued) ENING EFI	PIGWEED CORN REDROOT	<b>*</b>	0		30 75 (60)		
	Table 2 (continued) ITION AND % SAFENIN		75 (12	65 35	(0)	70 80 (13)	75 90 (17)	50 60 (17)
30	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO	:				95 95 (0)	30 32 (7)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUP GRAIN W WO	<b>:</b>					
40	*	RATE	2.24	2.24	2.24	2.24	2.24	8.96
45		ANTI- DOTE	17	17	17	17	17	11
		RATE	0.14	0.14	0.56	0.56	0.56	0.14
50		HERB.	N	'n	Ŋ	'n	ιĊ	Ŋ

5		VELVET LEAF W WO						
10		RICE W WO			100 100			
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	60 28			55 50		
20	FFECT ( )							10 25 (60)
25	nued) FENING EI	PIGWEED CORN REDROOT W WO W WO		0			0 75 (100)	15 25 (40)
	Table 2 (continued) ITION AND % SAFENIN	0	85 85 (0)	65 35	(0)	(0)	70 80 (13)	95 65
30	Table	SORGHUM WHEAT GRAIN W WO W WO			95 95			15 35 35 45 (58) (23)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUN GRAIN W WO						15 35
40	<b>5</b> 4	RATE	8.96	8.96	8.96	8.96	8.96	0.56
45		ANTI- DOTE NO.	17	17	17	17	17	18
		RATE	0.14	0.14	0.56	0.56	0.56	0.03
50		HERB.	Ŋ	Ŋ	'n	'n	Ŋ	

5								
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						85 38
20	FFECT ( )		20 50 (60)	15 25 (40)	30 50	15 25 (40)	30 50 (40)	
25	nued) FENING EI	PIGWEED CORN REDROOT W WO W WO	75 80	10 25 (60)	0 80 (100)	0 25 (100)	45 80	
	Table 2 (continued) ITION AND % SAFENIN	0	95 90	95 65	100 90	95 65	100 90	70 60
30	Table IBITION	1 WHEA	95 97	35 45 (23)	65 <i>97</i> (33)	40 45	95 97 (3)	
35	Table 2 (continued)	SORGHUN GRAIN W WO	70 95 (27)	10 35	(8 <del>7</del> )	5 35 (86)	65 95 (32)	
40	32	RATE	0.56	2.24	2.24	8.96	8.96	0.56
45		ANTI- DOTE NO.	18	18	18	18	18	18
•		RATE	0.14	0.03	0.14	0.03	0.14	0.14
50	٠	HERB.		T		1		7

5								
		VELVET LEAF W WO						
10		RICE W WO						
15		SOYBEAN T W WO				77 56		
20	( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
25	ed) NING EFFE	CORN W WO		95 82	85 92			95 100 100 100 (5) (0)
	(continue) % SAFE	PIGWEED CORN REDROOT W WO W W	30 35 (15)	100 98	80 60	90 85	85 80	95 100 (5)
30	Table 2 (continued) ITION AND % SAFENIN	WHEAT W WO	90 92 (3)				95 95 (0)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W	10 43				95 95	
40	9 <b>€</b>	RATE	0.56	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	18	18	18	18	18	18
50		RATE	0.14	0.28	0.28	0.56	0.56	1.12
		HERB.	8	7	6	7	7	8

5									
10		VELVET LEAF W WO							
10		RICE W WO							
15		SOYBEAN T W WO			40 38				77 06
20	cr ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W							
	d) ING EFFE	Q	95 100 (5)			95 82	90 92 (3)		
25	continue % SAFEN	PIGWEED CORN REDROOT W WO W	02 06	85 35	100 60	100 98	80 60 9	08 06	90 85
30	<pre>fable 2 (continued) ITION AND % SAFENIN</pre>	0	•	90 92 (			~	95 95 9	5
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		45 43				95 95 9	
40	38	RATE	0.56	2.24	2.24	2.24	2.24	2.24	2.24
45		ANTI- DOTE NO.	18	18	18	18	18	18	18
		RATE	1.12	0.14	0.14	0.28	0.28	0.56	0.56
50		HERB.	8	6	7	8	8	8	7

5									
10		RICE	0A 34						
15		TARTARY SOYBEAN RICE BUCKWHEAT	9				80 38		
20	FECT ( )	TARTARY SOBUCKWHEAT	0 3		0				
25	ued) ENING EF	D CORN	W WO W WO	(0)	95 100			100 82	95 92
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT		(0)	65 70 (8)	65 35	09 06	95 98 (4)	70 60
30	Table 2 BITION A	SORGHUM WHEAT GRAIN	0A 3			70 92 (24)			
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHURGRAIN	9 <u>8</u>			35 43 (19)			
40	3-8		RATE 2.24		2.24	8.96	8.96	8.96	8.96
45		ANTI-	NO.	}	18	18	18	18	18
			RATE		1.12	0.14	0.14	0.28	0.28
50		HERB.	NO.	1	7	8	И	7	7

5									
		VELVET LEAF	W WO						
10		RICE	0M M						
15		TARTARY SOYBEAN RICE BUCKWHEAT	M M		90 77				
20	ECT ( )	TARTARY SOBUCKWHEAT	OM M						
25	ed) NING EFFI	CORN	W WO			95 100 100 100 (5) (0)	90 100 (10)	15 10	15 40 (63)
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT	W WO	08 06	95 · 85	95 100 (5)	95 70	80 55	55 55 (0)
30	Cable 2 TTION AN	WHEAT	W WO	95 95 (0)					
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN	M M	95 95					
40	<b>≯</b> €		RATE	8.96	8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE	NO.	18	18	18	18	18	18
_			RATE	0.56	0.56	1.12	1.12	2.24	87.4
50		HERB.	NO.	7	8	8	84	ო	m

5								
10		VELVET LEAF W WO						
		RICE W WO						
15		SOYBEAN W WO						
20	ecr ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
25	ued) ENING EFF	D CORN F W WO	5 10 (50)	10 40 (75)	5 10 (50)	15 40 (63)		0
	(conting D % SAF)	PIGWEED CORN REDROOT W WO W N	60 55	40 55 (28)	50 55 (10)	75 55	95 95	100 100
30	Table 2 (continued) ITION AND % SAFENIN	WHEAT W WO					25 98 (75)	100 100
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WG					95 98	100 100 100 100 100 100 (0)
40	96	RATE	2.24	2.24	8.96	8.96	0.56	0.56
		ANTI- DOTE NO.	18	18	18	18	18	18
45		RATE	2.24	87.7	2.24	4.48	0.14	0.56
50		HERB.	n	m	က	m	4	4

5									
10		띉	NO.						
15		TARTARY SOYBEAN RICE BUCKWHEAT	M WO W			10 7	0 30 (1001)		
20	FECT ( )	TARTARY SI BUCKWHEAT		_			Ū		
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	WO W WO	75 80 85 90 (7) (6)	80 75 97 (23)	07 07 (0)	65 73 (11)	95	100
30	Table 2 (continued) ITION AND % SAFENIN		W W	75	06	(0)	65	95 98 95 (4)	100 100 100 100 95 100 (0) (0) (5)
35	PLANT INHIB	SORGHUM WHEAT GRAIN	W WO					100 98	100 100 (0)
<b>4</b> 0	94 —		RATE	0.56	0.56	0.56	0.56	2.24	2.24
		ANTI- DOTE	NO.	18	18	18	18	18	18
45			RATE	0.56	1.12	1.12	2.24	0.14	0.56
50		HERB.	NO.	4	4	4	4	4	4

5		VELVET LEAF V WO						
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			0 7 (100)	35 30		
20	EFFECT (	Ş		97				06
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W W W W	80 45	80 80 55 97 (0) (44)	80 70	70 73 (5)	90 95	70 80 45 90 (13) (50)
30	Table 2 (c BITION AND	WHEAT W WO		u	-		95 98	
35	PLANT INHI	SORGHUM GRAIN W WO					95 98	
40	ક્ષ	RATE	2.24	2.24	2.24	2.24	8.96	8.96
		ANTI- DOTE	18	18	18	18	18	18
45		RATE	0.56	1.12	1.12	2.24	0.14	0.56
50		HERB.	4	4	4	4	4	4

5									
10		VELVET LEAF	W WO						
		RICE	¥ 40						
15		SOYBEAN	M M			15 7	5 30	45 28	
20	ECT ()	TARTARY SOYBEAN RICE BUCKWHEAT	W WO					•	
25	ued) ENING EFF	D CORN I	W WO	0	85 97 (13)				0
	(continu D % SAE)	PIGWEED CORN REDROOT	A WO	100 100	95 80	70 70 (0)	70 73 (5)	80 85	60 35
30	Table 2 (continued)	WHEAT	W W0	100 100					
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN	M W	100 100 100 100 100 100 (0)					
40	<b>≯</b> €		RATE	8.96	8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE	NO.	18	18	18	18	18	18
			RATE	0.56	1.12	1.12	2.24	0.14	0.14
50		HERB.	NO.	4	4	4	4	'n	ß

5 95 100 100 100 3 10 9 TARTARY SOYBEAN RICE (3) 3 20 ş 28 15 80 3 45 BUCKWHEAT M WO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 ş 55 75 (27) PIGWEED CORN 3 Table 2 (continued) 0 65 80 25 REDROOT 06 06 35 8 85 90 9 (19) 9 95 95 3 90 65 SORGHUM WHEAT 95 95 ş 32 30 9 3 20 GRAIN W W 35 0.56 RATE 0.56 0.56 2.24 2.24 0.56 40 ANTI-DOTE 18 18 18 18 18 45 95.0 0.14 0.14 0.14 0.56 0.56 RATE 50 HERB. NO. Ŋ S S S S S

5							
		VELVET LEAF W WO					
10		O <sub>2</sub>	100 100			100 100 (0)	100 100
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			60 50		
20	ECT ( )	TARTARY SC BUCKWHEAT W WO V					
	ed) NING EFF	CORN W WO		10 75 (87)			
25	(continue	PIGWEED CORN REDROOT W WO W	65 60	70 80 (13)	(0)	95 90	75 60
30	Table 2 (continued) ITION AND % SAFENIN	WHEAT W WO	55 32			95 95	50 32
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W					
40		RATE	2.24	2.24	2.24	2.24	8.96
45		ANTI- DOTE NO.	18	18	18	18	18
		RATE	0.14	0.56	0.56	0.56	0.14
50		HERB.	ν	'n	'n	ហ	Ŋ

5								
10		VELVET LEAF W WO						
		RICE W WO					100 100	
15		SOYBEAN T W WO	20 28 (29)		(10)			
20	( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						5 25 (80)
25	ed) VING EFFE	CORN W WO		0		20 75 (74)		10 25 (60)
	continue	PIGWEED CORN REDROOT W WO W	90 85	50 35	(0)	75 80 (7)	95 90	95 65
30	Table 2 (continued)	WHEAT W WO					90 95	15 45 (67)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W						25 35 (29)
40	*	RATE	8.96	8.96	8.96	8.96	8.96	95.0
45		ANTI- DOTE NO.	18	18	18	18	18	19
50		RATE	0.14	0.14	0.56	0.56	0.56	0.03
50		HERB.	ស	ß	'n	νı	vs	Ħ

5		VELVET LEAF W WO		60 55	70 70 (0)			
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
20	FECT ( )		(0)	_	ō			
25	lued) ENING EI	PIGWEED CORN REDROOT W WO W WO	70 80 (13)	58 99	90 100		ស	
	Table 2 (continued) ITION AND % SAFENIN			100 90		60 15	0	50 50
30	Table 2 SITION A	SORGHUM WHEAT GRAIN W WO W WO		85 97 (13)		35 25		40 83
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM GRAIN W WO		25 95 (74)		0		20 58 (66)
40	9-6	RATE	0.56	0.56	0.56	1.12	1.12	1.12
45		ANTI- DOTE NO.	19	19	19	19	19	19
		RATE	0.14	0.14	0.56	0.03	0.03	0.14
50	•	HERB.	-	<b>-</b>		<b>-</b>	-	7

5								
		VELVET LEAF W WO				35 55 (37)	07 07 (0)	
10		N RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
20	FECT ( )		_	(80)	(40)		9	
	ued) ENING EF	D CORN I	5 68 (93)	5 25 (80)	70 80 (13)	23 99 (77)	85 100 (15)	
25	(continu D % SAFI	PIGWEED CORN REDROOT W WO W	35 75 (54)	80 65	100 90			60 15
30	Table 2 (continued) ITION AND % SAFENIN	WHEAT W WO		0 45	100 97			0 25 (100)
35	Table 2 (continued)	SORGHUM WHEAT GRAIN W WO W W		10 35 (72)	(9)			ĸ
40	94	RATE	1.12	2.24	2.24	2.24	2.24	4.48
		ANTI- DOTE NO.	19	19	13	19	19	19
45		RATE	0.14	0.03	0.14	0.14	0.56	0.03
50		, HERB.	r		H	F	H	1

5							
10		VELVET LEAF W WO				50 55 (10)	
		RICE W WO					
15		SOYBEAN T W WO					
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			15 25 (40)		(10)
<b>25</b> ,	ned) NING EFF	CORN W WO	0	0 68	15 25 (40)	12 99 (88)	55 80 45 50 (32) (10)
,	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W (	50 40 50 (20)	15 75 (80)	80 65	100 90	
30	Table 2 ITION AN	WHEAT W WO	85 83		(100)	85 <i>97</i> (13)	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WC	0 58 (100)		15 35 (58)	55 95 (43)	
40	9-6	RATE	4.48	4.48	8.96	8.96	8.96
		ANTI- DOTE NO.	19	19	19	19	19
45		RATE	0.03	0.14	0.03	0.14	0.14
50		HERB.			m.		M

5		VELVET LEAF W WO	07 07 (0)					
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			40 38			95 77
20	FFECT ( )	TARTARY SO BUCKWHEAT				82	8	
25	inued) AFENING E	CORN	95	35	09	95	50 70 92 ) (24)	85
	Table 2 (continued)	0		75	55 60	100 98	50 60 (17)	3 06
30	Table IBITION	W WHEA		3 65 92				
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM GRAIN W WO		30 43 (31)				
40	9-6	RATE	8.96	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE	19	19	19	19	19	19
		RATE	0.56	0.14	0.14	0.28	0.28	0.56
50		HERB.	-	8	8	8	8	8

	VELVET LEAF W WO						
	Ş						
	RICE W						
	BEAN						38 8
	SOYI AT W						07
$\circ$	TARY KWHE						
ECT	TAR						
EFF	EN KO		100	100			
ued) ENINC	. ZOO CO		0)				
ntin	GWEEI DROOT WO	80	0 100		48	95	100 60
(co)			300	80			100
le 2 ON A	EAT WO	95					
Tab (BITI	五 五 3					55	
INI	SRAIN V WC	(0)				0 95	
LANT	S O A	95			02	10	
<b>≥€</b>	ம	<b>v</b> o	vo	١٥.			
	RAT	0.5	0.5	0.56	1.12	1.12	2.24
	H B -						
	TNA TOO	19	19	19	19	19	19
	ATE .	.56	12	12	14	56	0.14
		Ö	<del>-</del>	, i	Ö		o.
	ERB.	7	71	8	8	8	7
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	F SOYBEAN RICE VELV SAT LEA W WO W WO W	Table 2 (continued)  % PLANT INHIBITION AND % SAFENING EFFECT ( )  ANTI-  BOTE  DOTE  DOTE  DOTE  NO. RATE  NO. RATE  NO. RATE  (0) (0) (7)	ANTI-  ANTI-  ANTI-  BOTE  DOTE  C.56  19  0.56  1.12  1.12  28  PLANT INHIBITION AND % SAFENING EFFECT ( )  RELAND AND % SAFENING EFFECT ( )  RELAND WHEAT PIGWEED CORN TARTARY SOYBEAN RICE  BUCKWHEAT  BUCKWHE	Table 2 (continued)  % PLANT INHIBITION AND % SAFENING EFFECT ( )  ANTI-  BOTE  BOTE  GRAIN  RATE  NO. RATE  NO. RATE  (0)  (0)  (1.12)  19  0.56  1.12  19  0.56  RATE  (0)  (0)  (0)  (0)  (0)  (0)	## PLANT INHIBITION AND % SAFENING EFFECT ( )  ANTI-  BOTE  DOTE  DOTE  GRAIN  RAIE  NO. RAIE  NO. S6  1.12  1.12  19  0.56  1.12  19  0.56  1.12  19  0.56  1.12  19  0.56  1.12  19  0.56  10  10  10  10  10  10  10  10  10  1	MATI-  ANTI-  SORGHUM WHEAT PIGWED CORN TARTARY SOVBEAN RICE  BOTE  GRAIN  RATE  NO. RATE  NO. SATE  NO. SATE  O.56  19  O.56  95  95  95  95  97  100  100  100  100  100  100  100

5								
40		VELVET LEAF V WO						
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					85 77	
20	ECT ( )	TARTARY SOBUCKWHEAT						
	ed) NING EFFI	CORN W WO		90 82	90 92 (3)			100 100 (0)
25	Table 2 (continued)	PIGWEED CORN REDROOT W WO W	10 35 (72)	65 98 (4)	85 60	90 80	80 85	80 70
30	Table 2 ITION AN	WHEAT W WO	25 92 (73)			95 95		
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W	0 43			95 95		
40	96	RATE	2.24	2.24	2.24	2.24	2.24	2.24
0.2		ANTI- DOTE NO.	19	19	19	19	19	19
45		RATE	0.14	0.28	0.28	0.56	0.56	1.12
50		HERB.	8	8	7	7	8	7

5								
10		Q						
		RICE						
		BEAN WO					38	
15		OYE.					30 38 (22)	
	~	TARTARY SE BUCKWHEAT					(1)	
	) H	FARTA SUCKA W %						
20	FFEC	T OA	00					8
	NG E	ORN W W	(0)					5 82
05	<pre>rable 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )</pre>	0	95 100 100 100 (5)	m	10			3 95
25	ontíu KSA	PIGWEED REDROOT	(5)	87	5 95	35	09	95 98 (4)
	) (2)		86	75	<b>∞</b>	75	06	95
30	le 2 on A	EAT		52	(0)	(46)		
	Tab BITI	M WHE		95	9,	<b>u</b> ,		
	INHI	SORGHUM WHEAT GRAIN W WO W W		23	(0)	30 43		
35	TWI	SOI		80	95	တ္တ		
	E.							
	24	RATE	2.24	4.48	4.48	8.96	8.96	8.96
40			7	4	4	<b>60</b>	<b>60</b>	80
		ANTI- DOTE NO.	19	19	19	13	19	19
		<b>4 2 7</b>	-	-	-	-	-	
45		RATE	.12	0.14	0.56	0.14	.14	. 28
			<b>-</b>	0	0	0	0	0
		HERB.	73	6	8	8	7	8
50		Ħ <sup>4</sup>						

5		VELVET LEAF W WO						
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			80 77			
20	ECT ( )	TARTARY SOUCKWHEAT  W WO				0	c	
	ed) IING EFF	CORN W WO	95 92			100 100	100 100	20 10
25	continue % SAFEN	PIGWEED CORN REDROOT W WO W	85 60	90 80	90 85	100 100 100 100 (0) (0)	80 70	15 55 (73)
30	Table 2 (continued)	0		95 95				
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		85 95 (11)				
40	9-6	RATE	8.96	8.96	8.96	8.96	8.96	0.56
<b>4</b> 5		ANTI- DOTE NO.	19	19	19	19	19	19
		RATE	0.28	0.56	0.56	1.12	1.12	2.24
50		HERB.	8	8	8	8	લ	ო

5		VELVET LEAF W WO						75 70
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
20	FECT ( )							
	) NG EF	CORN W WO	5 40	10	10 40 (75)	10	5 40 (63)	(100)
Δ_	iued	0 F	<del></del>	40		20	-	。
25	ntin	PIGWEED CORN REDROOT W WO W V	55	55	55	55	55	90 95
	იე) გე	PIGI REDI W	09	75	70	80	80	90
30	Table 2 (continued)	WHEAT W WO		·				90 98
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W						86 06
40	% PL	RATE	0.56	2.24	2.24	8.96	8.96	0.56
45		ANTI-DOTE	19	19	19	19	19	19
<b>™</b>		RATE	4.48	2.24	4.48	2.24	87.48	0.14
50		HERB.	က	ო	ന	က	ო	4

5								
10		VELVET LEAF W WO		85 85 (0)				
		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W N				(100)	20 30 (34)	
20	ECT ( )	TARTARY SO BUCKWHEAT W WO 1						
25	ted) INING EFFI	CORN W WO	70 80 60 90 (13) (34)	(46)	85 97 (13)			0 12 (100)
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W !	70 80 (13)	95 100 95 100 100 100 53 97 (5) (5) (0) (46)	85 80	80 70	70 73	75 40
30	Table 2 ITION AN	SORGHUM WHEAT GRAIN W WO W WO		(5)				
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM GRAIN W WO		95 100 (5)				
40	<b>&gt;</b> e	RATE	0.56	0.56	0.56	0.56	0.56	1.12
		ANTI- DOTE NO.	19	19	19	19	19	19
45		RATE	0.56	0.56	1.12	1.12	2.24	0.14
50		HERB.	4	4	4	4	4	4

5								
		VELVET LEAF W WO		07 07 (0)	80 85 (6)			
10		IN RICE						
15	3	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						5 7 (29)
20	Table 2 (continued)	Ş	10 53 (82)	0 8 (100)	15 97 (85)	65 90 (28)	75 97 (23)	
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W	60 65	95 95	100 100 100 15 ) (0) (85	9 08 06	70 80 7 (13)	90 70
30	Table 2 HIBITION A	SORGHUM WHEAT GRAIN W WO W WO		98 95 98	100 100 95 100 (0) (5)			
35	% PLANT IN			95	100			
40	·	I- E . RATE	1.12	2.24	2.24	2.24	2.24	2.24
45		ANTI-DOTE DOTE NO.	0.56 19	0.14 19	0.56 19	0.56 19	1.12 19	1.12 19
50		HERB.	4	4	4	4	4	4

5								
10		VELVET LEAF W WO				75 70		
		RICE W WO						
15		SOYBEAN T W WO	20 30					
20	cr ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
<u></u>	ed) HING EFFE	Q		0 12	20 53 (63)	(100)		30 90
25	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W W	65 73 (11)	07 09	75 65	100 95	100 100	70 80 30 90 (13) (67)
30	fable 2 ( TION AN	WHEAT W WO				90 98	100 100 100 100 100 (0) (0) (0)	
35	Table 2 (continued)	SORGHUM WHEAT GRAIN W WO W W				100 98	100 100 (0)	
40	34	RATE	2.24	4.48	4.48	8.96	8.96	8.96
		ANTI- DOTE NO.	19	19	19	19	19	19
45		RATE	2.24	0.14	0.56	0.14	0.56	0.56
50		HERB.	4	4	4	4	4	4

5								
			85 85 (0)					
10		RICE W WO	₩.					95 100 (5)
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W			20 7	20 30 (34)		
20	FECT ( )	TARTARY SI BUCKWHEAT W WO						
25	ued) ENING EFF	CORN F W WO	28 97 (72)	90 97			0	
	Table 2 (continued)	PIGWEED CORN REDROOT W WO W S		95 80	75 70	65 73 (11)	75 35	(0) 09 09
30	Table 2 BITION A	SORGHUM WHEAT GRAIN W WO W WO						10 32 (69)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUN GRAIN W WO						
40	24	RATE	8.96	8.96	8.96	8.96	0.56	0.56
45		ANTI- DOTE NO.	19	19	19	19	19	19
		RATE	0.56	1.12	1.12	2.24	0.14	0.14
50		HERB.	4	4	4	4	īO	v

5								
		VELVET LEAF W WO						
10		RICE W WO			100 100			
15		SOYBEAN T W WO	45 28	80 50				5 28 (83)
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
25	ued) ENING EFF	PIGWEED CORN REDROOT W WO W WO				10 75 (87)	0	
	Table 2 (continued) ITION AND % SAFENIN		90 85	(0)	95 90	70 80 (13)	65 35	95 85
30	Table 2 (BITION A	SORGHUM WHEAT GRAIN W WO W WO			95 95 (0)			
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUR GRAIN W WO						
40	96	RATE	0.56	0.56	0.56	0.56	2.24	2.24
45		ANTI- DOTE NO.	19	19	19	19	19	19
		RATE	0.14	0.56	0.56	0.56	0.14	0.14
50		HERB.	Ŋ	Ŋ	'n	Ŋ	и	'n

5								
		VELVET LEAF W WO						
10		Ş	100 100	100 100				
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W				30 50 (40)		80 28
20	ect ( )	TARTARY SUBUCKWHEAT						
25	ied) ENING EFF	CORN W WO		·	15 75 (80)		0	
	Table 2 (continued) ITION AND % SAFENIN	PIGWEED CORN REDROOT W WO W I	(0)	75 90 (17)	80 80 (0)	(0)	65 35	90 85
30	Table 2 ITION AN	WHEAT W WO	40 32	95 95				
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W						
40	94	RATE	2.24	2.24	2.24	2.24	8.96	8.96
45		ANTI- DOTE NO.	19	19	19	19	19	19
50		RATE	0.14	0.56	0.56	0.56	0.14	0.14
		HERB.	ស	ī.	Ŋ	'n	Ŋ	Ŋ

Table 2 (continued)   Sakening Effect ( )   Sakening Effect ( )	5		RICE VELVET LEAF W WO W WO	85 100 (15)	100 100			55 55 (0)	65 70
Table 2 (Continued)  **RATI NATIANTI NHIBITI ON AND **SAFENING EFFE  BOTE  BATI OTE  BATI OTE  BATI OTE  BATI OTE  BATI OTE  BATI OTE  CRAIN MHEAT PICKEED CORN  CRAIN MHEAT PICKEED CORN  CRAIN MHEAT PICKEED CORN  CRAIN MHEAT PICKEED CORN  CRAIN MW WW	15		Y SOYBEAN EAT W WO						
ANTI- DOTE RATE NO. RATE 0.14 19 8.96 0.56 19 8.96 0.56 19 8.96 0.56 20 0.56	20	EFFECT ( )	Q.			75		99	100
ANTI- DOTE RATE NO. RATE 0.14 19 8.96 0.56 19 8.96 0.56 19 8.96 0.56 20 0.56	25	(continued) D % SAFENING	PIGWEED CORN REDROOT W WO W	50 60 (17)	(0) 06 06			U)	99 (1)
ANTI- DOTE RATE NO. RATE 0.14 19 8.96 0.56 19 8.96 0.56 19 8.96 0.56 20 0.56	30	Table 2 ITION AN	WHEAT	ð	30 95				
ANTI- DOTE RATE NO. RATE 0.14 19 8.96 0.56 19 8.96 0.56 19 8.96 0.56 20 0.56	35	PLANT INHIE	SORGHUN GRAIN W WO						
RATE 0.14 0.56 0.56 0.56 0.56 0.56 0.56	40	<b>}</b> \$	RATE	8.96	8.96	8.96	8.96	0.56	0.56
RATE 0.14 0.56 0.56 0.56	45		ANTI- DOTE NO.	19	19	19	19	20	20
. HERB. 5 5 10 11 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	~		RATE	0.14	0.56	0.56	0.56	0.14	0.56
	50		. HERB.	ιń	ιΛ	ហ	Ŋ		F

5		VELVET LEAF W WO					55	70
		2 1 3					9	80
10		RICE W WO						
15		SOYBEAN F W WO						
	и ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
20	G EFFE	Ş				15 <b>68</b> (78)	75 99 (25)	95 100 (5).
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT W WO W V	20 0	50 15	45 50 (10)	0 75 15 68 (100) (78)	75 (2	95 1 .(5).
30	Table 2 BITION AN	SORGHUM WHEAT GRAIN W WO W WO		10 25 (60)	85 83			
35	PLANT INHI	SORGHUN GRAIN W WO		0	15 58 (75)			
40	94	RATE	1.12	1.12	1.12	1.12	2.24	2.24
		ANTI- DOTE NO.	70	20	20	20	20	20
45	٠	RATE	0.03	0.03	0.14	0.14	0.14	0.56
50		HERB.	1	<b>F</b>	F		F	F

5		VELVET LEAF W WO					70 55	75 70
10		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
20	ect ( )	TARTARY SOBUCKWHEAT						
	ed) NING EFF	CORN W WO	0			20 68 (71)	85 99	95 100 (5)
25	Table 2 (continued)	PIGWEED CORN REDROOT W WO W		60 15	30 50	35 75 (54)		
30	Table 2	WHEAT W WO		45 25	(22)			
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W		15	5 58 (92)			
40	%	RATE	87.7	4.48	4.48	4.48	8.96	8.96
45		ANTI- DOTE NO.	20	20	20	50	20	70
		RATE	0.03	0.03	0.14	0.14	0.14	0.56
50		HERB.	Ħ	7	<b>н</b>	Ħ	ī	г

5										
10										
15			TARTARY SOYBEAN RICE BUCKWHEAT	W W W		15 38 (61)				77 0
20		FECT ( )	TARTARY SOBUCKWHEAT	0M M		1				06
25	tinued)	Safening efi	PIGWEED CORN REDROOT	W WO W WO	35	60	98 75 82 (9)	60 90 92 (3)	80	85 4)
30	Table 2 (continued)	% PLANT INHIBITION AND % SAFENING EFFECT ( )		w w	35 92 20 35 (62) (43)	0 60 (100)	100 98	70	95 95 85	65 89 (24)
35	L	PLANT INHIBI	SORGHUM WHEAT GRAIN	W WO	45 43				(0)	
40		<b>≯€</b>	-1 8	. RATE	0.56	0.56	0.56	0.56	0.56	0.56
			ANTI- DOTE	NO.	20	20	50	20	20	20
45				RATE	0.14	0.14	0.28	0.28	0.56	0.56
50			. HERB.	NO.	8	7	м	м	8	М

5								
		VELVET LEAF W WO						
10		0.4						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					80 38	
20	ECT ( )	TARTARY SC BUCKWHEAT W WO N						
	ed) VING EFF]	CORN W WO	100 100 100 100 (0)	100 100				
25	continue	PIGWEED CORN REDROOT W WO W V	100 100	75 70	(100)	90 95 (6)	55 60	10 35 (72)
30	Table 2 (continued) ITION AND % SAFENIN	WHEAT W WO	,		55 52	95 95		65 92 (30)
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO			35 23	80 95 95 95 (16) (0)		10 43 (77)
	% PLL	RATE	0.56	0.56	1.12	1.12	2.24	2.24
40		ANTI- DOTE NO.	50	20	20	50	50	20
45		RATE	1.12	1.12	0.14	0.56	0.14	0.14
50		HERB.	8	8	0	8	8	8

5								
10		VELVET 1EAF W WO						
		RICE W WO						
15		SOYBEAN T W WO				77 08		
20	ccr ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W						
25	lued) TENING EFFE	PIGWEED CORN REDROOT W WO W WO	95 82	70 92 (24)			100 100 100 100 (0) (0)	100 70 100 100 (0)
	Table 2 (continued) ITION AND % SAFENIN		95 98 (4)	85 60	90 80	95 85	100 100	100 70
30	Table 2 BITION /	SORGHUM WHEAT GRAIN W WO W WO			95 95			
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUN GRAIN W WO			95 95			
40	3-8	RATE	2.24	2.24	2.24	2.24	2.24	2.24
45		ANTI-DOTE	70	20	20	20	20	20
•••		RATE	0.28	0.28	0.56	0.56	1.12	1.12
50		HERB.	8	8	8	N	8	71

5 Ş 10 TARTARY SOYBEAN RICE 3 Ş 38 15 3 2 BUCKWHEAT M WO % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 Ş 82 92 PIGWEED CORN 3 Table 2 (continued) 90 95 REDROOT 25 OM M 48 9 100 98 9 95 95 35 9 95 80 75 95 ş 52 95 95 25 92 SORGHUM WHEAT 9 30 3 80 5 23 GRAIN OM M 10 43 95 95 (64) (77) 9 35 RATE 4.48 4.48 8.96 8.96 8.96 8.96 40 ANTI-DOTE . 02 20 20 20 20 20 20 45 0.14 0.56 0.14 0.14 0.28 0.28 HERB. 50 NO. 7 ~ 8 N N ~

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5								
		VELVET LEAF W WO						
		VELY VELY						
10		08						
		TICE W V						
		- K						
46		rbea) Wo	77					
15		SOY AT	85					
	$\circ$	rary Kwhe. Wo						
	5	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W V						
20	अंग्र	90			00	0	9 0	
	<u>ရ</u>	ORN W W			(6)	100 100	(100)	10 40 (75)
	ued) ENIN	•			100 100 100 100 (0) (0)		°	10
25	tin	PIGWEED REDROOT W WO	85	80	100	70 70 (0)	55 3)	55
	con %	PIG REDI W	95	85	900	70 7 (0)	15 5! (73)	25 5! (55)
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	W W		95				
30	ble	HEA		95 95 (0)				
	Ta IBI	-						
	H.	CRAIN W WO		95 95				
35	T.S.	S G 3		95				
	PL							
	3-8	RATE	8.96	8.96	8.96	96	26	99
40		\$	ထ	<b>∞</b>	<b>∞</b>	8.96	0.56	0.56
		i 10 .						
		ANTI- DOTE NO.	20	20	20	20	20	20
45				١0			_	
		RATE	0.56	0.56	1.12	1.12	2.24	4.48
			-	•		••	••	7
50		HERB.	8	7	64	7	က	e
		2 ~						

5	VELVET LEAF W WO					07 07 (0)
10	RICE W WO					
15	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W	: }				
20	N TAR: BUC!	2 0	40	10	40	8 30)
Table 2 (continued)	PIGWEED CORN REDROOT W W W W	-	85 55 5 4(	90 55 10 10 (0)	50 55 20 40 (10) (50)	100 95 0 8 (100)
s S Table 2 (	SORGHUM WHEAT GRAIN W WO W WO	<u>.</u>				85 98 (14)
35	SORGHUP GRAIN W WO					(4)
40	RATE	2.24	2.24	8.96	8.96	0.56
<b>45</b>	ANTI- DOTE NO.	50	20	20	20	20
	RATE	2.24	4.48	2.24	4.48	0.14
50 ·	HERB.	ო	ო	ო	ო	4

5							
		VELVET LEAF W WO			80 85		
10		Ş					
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W					20 7
20	FECT ( )					•	
25	led) INING EF:	CORN W WO		15 90	75 97 (23)	80 97	
25	Table 2 (continued)	PIGWEED CORN REDROOT W WO W	100 100 95 100 80 100 (0) (5) (20)	75 80		70 80 (13)	65 70 (8)
30	Table 2 ITION AN	WHEAT W WO	95 100 (5)				
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO	100 100				
40	3-6	RATE	0.56	0.56	0.56	0.56	0.56
45		ANTI- DOTE NO.	20	20	50	20	20
		RATE	0.56	0.56	0.56	1.12	1.12
50		HERB.	4	4	4	4	4

5								
10		VELVET LEAF W WO				85 70		
		RICE W WO						
15		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO	5 30					
20	ECT ( )	TARTARY SUBUCKWHEAT						
05	ted)	CORN W WO		5 12 (59)	5 53 (91)	0 8 (100)	_	80 25 90 (73)
25	Table 2 (continued)	PIGWEED CORN REDROOT W W W	70 73 (5)	(001) 07 0	65 65 (0)	100 95	100 100 100 100 95 100 (0) (0) (5)	85 80
30	Table 2 ITION AN	WHEAT W WO				95 98 80 98 (4) (19)	100 100	
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W				95 98 (4)	100 100	
	્રકર	RATE	0.56	1.12	1.12	2.24	2.24	2.24
40		ANTI- DOTE NO.	20	20	20	20	50	20
45		RATE	2.24	0.14	0.56	0.14	0.56	0.56
50		HERB.	4	4	4	4	4	4
50								

5								
10		VELVET LEAF W WO	85 85					
		RICE W WO						
15		SOYBEAN LT W WO			(100)	20 30 (34)		
20	ECT ( )	TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W 1						
25	ed) NING EFF	CORN W	85 97 (13)	85 97 (13)			0 12 (100)	40 53 (25)
	Table 2 (continued)	PIGWEED CORN REDROOT W WO W 6		90 80	07 07 (0)	75 73	25 40	80 65
30	Table 2 HITION AN	WHEAT W WO						
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W W						
40	<b>\$4</b>	RATE	2.24	2.24	2.24	2.24	87.7	4.48
		ANTI- DOTE NO.	20	20	20	20	20	20
45		RATE	0.56	1.12	1.12	2.24	0.14	0.56
50		HERB.	4	4	4	4	4	4

5		VELVET LEAF	07 09	(15)			80 85		
10		RICE							
15	( )	TARTARY SOYBEAN RICE BUCKWHEAT	<b>*</b>						0 7 (100)
20	d) ING EFFE	CORN	æ & ∞	(100)		35 90 (62)	12 97 (88)	(39)	
25	Table 2 (continued)	PIGWEED CORN REDROOT	W W0	(0)	95 100 100 100 100 100 (5) (0)	08 06		90 80	65 70 (8)
30	Table 2 ITION AN	WHEAT	W WO A	(7)	(0)				
35	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN	W 26	(7)	95 100 (5)				
	34		RATE 8.96		8.96	8.96	8.96	8.96	8.96
40		ANTI- DOTE	70 Z0 .		20	20	20	20	20
45			RATE 0.14		0.56	0.56	0.56	1.12	1.12
50		HERB.	NO. 4		4	4	4	4	4

5									
		VELVET LEAF	3						
		VEI LE	3						
10			§			100			
		ICE	3			100 100 (0)			
		۲ ک				-			
15		TARTARY SOYBEAN RICE BUCKWHEAT	WO	20 30			28		50
		SO)	3	20			80		50
	$\overline{}$	TARTARY SO BUCKWHEAT	Ş						
	) H	ART	MO 35						
20	FFEC	н н							
	ធ ១	<b>3</b> 2	<b>§</b>					(60)	
	ed)	8	3		0	•		30	
25	inu	PIGWEED CORN REDROOT	8	73	35	09	85 0	70 80 30 75	96
	% S	PI GA	3	(11)	09	82	75 85 (12)	70 8C (13)	85 (6)
	2 ( AND		<b>9</b>			32 6	,-	, -	~
30	ole	ŒAT	3						
30	Table 2 (continued) BITION AND % SAFENIN	1 WHEAT	3			30 3			
30	Table NHIBITION	GHUM WHEAT AIN	34 O3						
30 35	Table IT INHIBITION	SORGHUM WHEAT GRAIN	3						
	Table PLANT INHIBITION	Sorghum wheat grain	34 O3						
	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	Sorghum wheat grain	3 9 3	vo.	Va	30 (7)	<b>V</b> 2	<b>V</b> 0	<b>10</b>
	Table % PLANT INHIBITION	SORGHUM WHEAT GRAIN	3 9 3	8.96	0.56	30 (7)	0.56	0.56	0.56
35	Table % PLANT INHIBITION		34 O3	8.96	0.56		0.56	0.56	0.56
35	Table % PLANT INHIBITION		RATE W WO W			0.56 30 (7)			
35	Table % PLANT INHIBITION	ANTI- SORGHUM WHEAT DOTE GRAIN	3 9 3	8.96	20 0.56	30 (7)	20 0.56	20 0.56	20 0.56
35 40	Table % PLANT INHIBITION		NO. RATE W WO W	20	20	20 0.56 30 (7)	20	20	20
35 40	Table % PLANT INHIBITION		RATE W WO W			0.56 30 (7)			
35 40	Table % PLANT INHIBITION	ANTI- DOTE	RATE NO. RATE W WO W	2.24 20	0.14 20	0.14 20 0.56 30	0.14 20	0.56 20	0.56 20
35 40 45	Table % PLANT INHIBITION	ANTI- DOTE	NO. RATE W WO W	20	20	20 0.56 30 (7)	20	20	20

5									
		VELVET LEAF							
		VELY					0		0
·10		E E	100 100	~			100		100 100
		RIC	100	9			95		100
15		BEAN	<b>≩</b>			28			
		SOY]	<b>*</b>			70			
	0	TARTARY SOYBEAN RICE BUCKWHEAT	<b>≩</b>						
20	t t	TART BUCE	<b>&gt;</b>						
	effe	S	⊋					75	
	d) ING	CORN	3		0			(94)	
25	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	PIGWEED CORN REDROOT	§ 6		35	82	9 (6		06
	cont % S	PIGWEED REDROOT	¥ 56		22	06	(59)	70 80 (13)	(0)
30	2 (	,	95 95				35		
	able	<u> </u>	× 56	<u> </u>			30		95 95 (0)
	Ta (IBI)								-
35	ENI .	SORGHURGRAIN	Q <b>3</b> 3 <b>3</b>						
	LANT	S							
-	<b>36</b>		ы vo		4	4	4	4	4
. 40		Ē	RATE 0.56		2.24	2.24	2.24	2.24	2.24
		<u>.</u>							
45		ANTI- DOTE	МО. 20		70	20	20	20	20
			ы v		4	4	4	9	يو
			RATE 0.56		0.14	0.14	0.14	0.56	0.56
50		œ.							
		HERB.	NO.		Ŋ	<b>ن</b> م	'n	S	2
		•							

5								
10		TARTARY SOYBEAN RICE BUCKWHEAT W WO W WO W WO	50	80 100 (20)	28		50	
15		RY SOY HEAT O W	35 50		30		30 50	
	ECT (	TARTARY SO BUCKWHEAT W WO V						
20	id) IING EFT	CORN W WO				0		10 75 (87)
25	Table 2 (continued)	PIGWEED CORN REDROOT W WO W V	(0)	25 60 (59)	95 85	65 35	(0)	75 80 10 75 (7) (87)
30	Table 2 (continued) % PLANT INHIBITION AND % SAFENING EFFECT ( )	SORGHUM WHEAT GRAIN W WO W WO		30 32 (7)				
35	% PLANT IN			·				
40		RATE	2.24	8.96	8.96	8.96	8.96	8.96
		ANTI- DOTE NO.	20	20	20	20	20	20
45		RATE	0.56	0.14	0.14	0.14	0.56	0.56
50		HERB.	សា	ស	'n	ĸ	w	Ŋ

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5 10 TARTARY SOYBEAN RICE 15 BUCKWHEAT % PLANT INHIBITION AND % SAFENING EFFECT ( ) 20 PIGWEED CORN Table 2 (continued) 25 REDROOT 30 SORGHUM WHEAT GRAIN 35 40 ANTI-DOTE

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### Example 7

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The following procedure shows interaction betwe in herbicide and antidote when applied together as a mixture before emergence of the crop and weed species, simulating a "tank-mixture" application. Containers were filled and compacted with furnigated silt loam top soil to a depth of about 1.3 cm from the top of the container. A first container was designated as an untreated control, a second container was designated as a herbicide control, and a third container was designated as a herbicide + antidote test container. Each of the containers was seeded with both crop plant and weed species. The herbicide (imazaquin) and the herbicide + antidote test mixture were applied to the seeded containers either by a procedure of topical application to a soil layer placed over the seed bed followed by watering to achieve incorporation, or by a procedure of incorporation into soil and then placement of the treated soil into the container over the seed bed. The containers were then placed on a greenhouse bench, and sub-irrigated as required for the duration of the test. Plant response was observed about three weeks after initial treatment. Results are reported in Table 3.

	T	ABLE 3
%	Plant	Inhibition

		<u>6                                    </u>	Tanc 1	ITITALLI	<u> 211</u>		
	Herb	Antidote		% 1	Inhibit	tion	
	No. 1	No.		/8 -		-1011	
20	Kg/Ha	0.56 Kg/Ha	Cown	Camabaan	TiTh a a de	D-2	a
	Mg/Ha	0.30 ку/па	COLII	Sorgnum	wneat	Kice	Soybeans
	^	_	_	_			
	0	0	0	0	0	0	0
	0.28	0	10	15	10	30	0
	0.56	0	15	35	35	55	10
25	1.12	0	50	50	45	70	15
	0.28	2	15	20	15	45	0
	0.56	2	20	25	10	60	ŏ
	1.12	2 2 2	25	25	15	55	10
30		_	20	20	13	73	10
	0.28	8	10	20	10	20	^
	0.56	8	20				0
	1.12			15	20	45	0
	1.12	8	35	25	15	55	10
	0 00	•					
35	0.28	9	15	25	15	15	0
	0.56	9	15	35	40	70	0
	1.12	9	25	30	30	55	0
	0.28	14	5	10	0	10	0
40	0.56	14	25	25	20	55	0
	1.12	14	45	35	25	55	10
	0.28	16	5	20	5	30	0
	0.56	16	15	20	20	45	Ŏ
45	1.12	16	30	35	35	65	10
70						•	
	0.28	17	5	15	10	15	0
	0.56	17	10	15	10	45	Ö
	1.12	17	20	30	35	60	
	***	1,	20	30	35	60	10
50	0.28	<b>A</b>	10	22			_
		4	10	20	15	15	0
	0.56	4	25	20	30	45	0
	1.12	4	30	35	30	70	20
	_						
55	0.28	3	10	25	25	20	0
	0.56	3	20	15	35	45	5
	1.12	3	40	40	40	70	15

Summarizing th data in Table 3 it is shown that com, wheat, rice and sorghum were significantly saf ned against the herbicidal activity of imazaquin (H rbicide N . 1) by ne or more of the antidotes in the test. S y-beans were n t significantly injured by the herbicid , h nce preventing evaluation f the antidotes. Imazaquin injury on corn at 1.12 kg/ha was reduced from an average of 50% to an average of 26% for Antid te Nos. 2, 4, 9 and 16. Sorghum injury by imazaquin was reduced from 50% to an average of 28% at 0.56 kg/ha by Antidotes Nos. 2, 8, 9, 77 and 17. Wheat injury by the herbicide was reduced from an average of 45% to 18% at 0.56 kg/ha by Antidotes Nos. 2, 8 and 14. And rice injury was reduced from an average of 55% to an average of 35% when Antidote No. 77 (0.56kg/ha) was mixed with 0.56 kg/ha of the herbicide.

Overall, com and sorghum, were more susceptible to safening against the herbicide than rice and wheat.

#### Example 8

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The following procedure was used to determine the interaction between a herbicide (imazaquin) and various antidotes when the herbicide is topically applied to crop seed. Crop plant seed may be treated with the antidote either by contacting the seed with antidote in powder form or by contacting the seed with solution or suspension of antidote compound dissolved or suspended in a suitable solvent, typically methylene chloride or toluene. Relative amounts of antidote compound and seed are used to provide an antidote-on-seed concentration, on a percent weight/weight basis, typically within the range of about 0.03 to 0.13%. Containers were filled and compacted with furnigated silt loam type soil to a depth of about 1.3 cm from the top of the container. A first container was designated as an untreated control, a second container was designated as a herbicide control, and a third container was designated as a herbicide + antidote test container. Untreated crop seed was placed in the first and second containers. Antidote-treated crop seed was placed in the third container. Then, each of the second and third containers was filled and leveled with a cover layer of soil having incorporated therein the selected herbicide at a pre-determined concentration. The first container was filled and leveled with soil containing no herbicide. All containers were given about 0.6 cm of overhead water to simulate an activating rainfall. The containers were placed on a greenhouse bench and sub-irrigated as required for the duration of the test. Plant response was observed about three weeks after initial treatment.

in Table 4, the herbicide was applied in the preplanted soil-incorporated mode with the antidote-coated seed as described above and in Table 4A, the herbicide was applied in a postemergence mode when the com was in the 2-leaf stage (7-8 cm) and the sorghum was in the 3-leaf stage (6-8 cm).

In this example, the antidotes were coated onto Pioneer corn seed and DeKalb sorghum seed for testing with imazaquin herbicide. Test results are shown in Tables 4 and 4A. The percent injury values shown for the herbicide treatment only (no antidote) are averages of six replications.

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TABLE 4
SEED TREATMENT - PREPLANT INCORPORATION

		SEED TREATMENT	- PREPLANT IN	CORPORATION
	Herb	Antidote	% Tr	hibition
5	No. 1	No.	70	
	Kg/Ha	0.125 % w/w	Pioneer Corn	DeKalb Sorghum
				Destard Dergitali
	0	0	0	0
	0.56	0	70	60
10	1.12	0	80	75
	2.24	0	95	85
	0	3	0	0
	0.56	3	65	50
15	1.12	3	75	60
	2.24	3	90	75
				, ,
	0	7	0	0
	0.56	7	55	55
20	1.12	7	65	50
	2.24	<b>7</b> ·	85	80
		-		•
	0	13	0	0
	0.56	13	60	50
25	1.12	13	65	50
	2.24	13	90	80
	0	•	_	
	0.56	2 2 2	0	0
	1.12	2	65	55
30	2.24	2	75	. 65
	2.24	2	95	85
	0	14	^	_
	0.56	14	0	0
Ω	1.12	14	55 35	60
35	2.24	14	75 00	70
	2.23	7.4	80	80
	0	16	o	_
	0.56	16	80	0
44	1.12	16	90	60
40	2.24	16	90	75 65
		10	30	65
	0	77	0	^
	0.56	77	65	0
	1.12	77	75	60
45	2.24	77	95	60 70
		• •	93	70

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TABLE 4A

		SEED TREATMENT	- POSTEMEDGENO	F.TOFATMENT
	Herb	Antidote		hibition
	No. 1	No.	/6 111	11121 (1011
			Diamage Com	Dovalh Camehum
5	Kg/Ha	0.125 % W/W	Ploneer Corn	DeKalb Sorghum
	_	_	_	_
	0	0	0	0
	0.56	0	90	75
	1.12	0	95	80
	2.24	0	98	90
10				
	0	3	0	0
	0.56	3	85	60
	1.12	3	95	65
	2.24	3	98	70
15	2.24	3	96	70
,,	•	_	•	2
	0	7	0	0
	0.56	7	80	55
	1.12	7	95	60
	2.24	7	98	80
20			: .	•
	0	13	0	0
	0.56	13	85	55
	1.12	13	95	65
	2.24	13	98	70
05	2.23	13	. 38	70
25	0	2	•	•
		2	0	0
	0.56	2	85	60
	1.12	2	90	65
	2.24	2	98	75
30			•	
	0	14	0	0
	0.56	14	80	60
	1.12	14	90	65
	2.24	14	98	80
0.5				
35	0	16	0	0
	0.56	16	75	. 55
			90	60
	1.12	16		
	2.24	16	98	80
40	_			_
	0	77	0	0
	0.56	77	85	65
	1.12	77	90	75
	2.24	77	95	80

Referring to the data in Tables 4 and 4A, it appears that corn was not significantly safened in this test. However, some sorghum safening was observed with both preplant incorporated (PPI) and postemergence applications of the herbicide on treated seed. Although replicates were somewhat erratic, when averaged, Antidote No. 3, 7, 13, 14 and 16 demonstrated significant safening against imazaquin applied PPI and/or postemergence.

Sorghum injury levels were reduced from a range of 75%-85% to a range of 50%-65% for imazaquin at 1.12 kg/ha applied PPI or postemergence.

## Example 9

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This exampl follows the proc dure described in Exampl 6, but uses certain modifications thereof. These procedur s are designed to test the interaction betwe in herbicide and antidot whin both are incorporat d in a soil cover layer b fore emergence of crop and weed species. The imidazclinone herbicide in this example

was No. 4 (imazethapyr) mixed with acetochlor as a co-herbicide. The numbered antidotes are identified above. C ntainers were fill d and compacted with a furnigat d silt loam top soil to a depth of about 1.3 cm from th top of the container. A first container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control, a second container was designated as an untreated control of the container was designated as an untreated control of the container was designated as an untreated control of the container was designated as a control of the control of t nated as a herbicide control, and a third container was designated as a herbicide + antidote test container. Each of the containers was seeded with a crop species. A measured amount of each herbicide dispersed or dissolved in acetone or water was applied to a measured quantity of soil. To this same quantity of soil treated with herbicide, there was added a measured amount of antidote dispersed or dissolved in acetone or water. The quantity of soil treated with the herbicide and antidote was thoroughly mixed to incorporate the herbicide and antidote in the soil uniformly. The seed bed in the third container of soil was covered with the soil treated with the herbicide and antidote and the container was leveled. For each test series, the seed beds of the first and second containers were likewise covered by soil layers. The cover layer of the first container was not treated with herbicide or antidote. The cover layer of the second container had a measured quantity of both herbicides alone incorporated therein. Each container received 0.6 cm overhead irrigation. The containers were then placed on a bench in a greenhouse and sub-irrigated as required for the duration of the test. Plant response was observed about three weeks after initial treatment. Results are reported in Table 5, wherein the weeds in the test, redroot pigweed and barnyardgrass have the symbols "RRP" and "BYG", respectively. The first three treatments (without the antidote are the average of three replications and all others one replication.

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Table 5

_	Herbi				a.	<b>.</b> .	
5	Acetochlo			idote	<u>%</u>	Injury RRP	DVC
	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG
	4.48	-	1	•	45	100	100
10	-	0.56	1	-	85	100	80
	4.48	0.56	1	••	100	100	100
	_	-	1	8.96	0	0	0
15	4.48	-	1	2.24	0	0	0
	4.48	-	1	8.96	20	100	100
	-	0.56	1	2.24	15	0	90
	-	0.56	1	8.96	20	90	95
20	4.48	0.56	1	2.24	40	100	100
	4.48	0.56	1	8.96	15	100	100
	-	-	3	8.96	35	0	0
25	4.48	-	3	2.24	0	100	100
	4.48	-	3	8.96	30	100	100
	-	0.56	3	2.24	40	25	85
	-	0.56	3	8.96	40	100	80
30	4.48	0.56	3	2.24	60	100	100
	4.48	0.56	3	8.96	40	100	100
	-	-	5	8.96	0	0	0
35	4.48	-	5	2.24	60	100	100
	4.48	•	5	8.96	25	100	100
	-	0.56	5	2.24	60	100	100
40	-	0.56	5	8.96	20	90	85
40	4.48	0.56	5	2.24	90	100	100
	4.48	0.56	5	8.96	55	100	100
	-	-	4	8.96	15	0	0
45	4.48	-	4	2.24	35	100	100
	4.48	-	4	8.96	35	100	100
	-	0.56	4	2.24	10	0	75
50	-	0.56	4	8.96	5	30	85
	4.48	0.56	4	2.24	50	100	100
	4.48	0.56	4	8.96	35	100	100

Table 5 (continued)

	Herbi Acetochlo		Ans	tidote	%	Taines	
5	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	Injury RRP	BYG
	-	-	9	8.96	0	100	75
10	4.48	-	9	2.24	55	100	100
	4.48	-	9	8.96	10	100	100
	-	0.56	9	2.24	10	20	80
	•	0.56	9	8.96	20	90	85
15	4.48	0.56	9	2.24	50	100	100
	4.48	0.56	9	8.96	60	100	100
	•	-	13	8.96	0	100	0
20	4.48	-	13	2.24	5	100	100
	4.48	-	13	8.96	0	100	100
•	-	0.56	13	2.24	30	15	65
	-	0.56	13	8.96	20	0	95
25	4.48	0.56	13	2.24	65	100	100
	4.48	0.56	13	8.96	35	100	100
	-	-	18	8.96	0	100	90
30	4.48	-	18	2.24	20	100	100
	4.48	-	18	8.96	0	100	100
	-	0.56	18	2.24	5	25	70
35	-	0.56	18	8.96	20	85	85
	4.48	0.56	18	2.24	25	100	100
	4.48	0.56	18	8.96	10	100	100
	•	-	19	8.96	0	100	85
40	4.48	-	19	2.24	0	100	100
	4.48	-	19	8.96	10	100	100
	-	0.56	19	2.24	15	100	85
45	-	0.56	19	8.96	15	10	15
	4.48	0.56	19	2.24	25	100	100
	4.48	0.56	19	8.96	5	100	100

Overall, Antidote No. 19 was the most active, followed closely by Antidote No. 18. These antidotes both reduced injury to corn by combinations of 4.48 kg/ha of acetochlor and 0.56 kg/ha of Herbicide No. 4 (imazethapyr) from 92% to 25% at 2.24 kg/ha.

### Example 10

**55** 

This test was conducted to valuate the antidital (safening) iffect of a number of antidotes against combinations of imazethapyr and metolachlor in corn in the presence of the weeds redroot pigweed (RRP) and barnyardgrass (BYG).

Th test procedur here was the same as that described in Example 9. Percent injury values the plants treated with herbicide formulations containing no antidote represent averages of three replications, while percent injuries resulting from antidote-containing formulations are based on one replicate. Test results are shown in Table 6.

Table 6

	Herbi						
40	Metolachl	or No. 4	An	tidote		<u> Inju</u>	<b>- Y</b>
10	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG
	8.96	•	_	-	40	90	100
15	-	0.56	-	•	88	75	100
15	8.96	0.56	-	-	95	100	100
		-	1	8.96	0	0	0
	8.96	-	1	2.24	0	90	100
20	8.96	-	1	8.96	5	100	100
	-	0.56	1	2.24	85	80	100
	-	0.56	. 1	8.96	75	85	100
25	8.96	0.56	1	2.24	90	100	100
	8.96	0.56	1	8.96	90	100	100
	-	-	22	8.96	0	0	0
30	8.96	-	22	2.24	0	100	100
•	8.96		22	8.96	0	100	100
	-	0.56	22	2.24	95	60	95
	-	0.56	22	8.96	95	75	100

# Table 6 (continued)

5	Herbic Metolachlo		Ar	itidote	% Injury			
	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG	
	8.96	0.56	22	2.24	95	100	100	
10	8.96	0.56	22	8.96	85	100	100	
10	-	-	24	8.96	0	0	0	
	8.96	-	24	2.24	20	100	100	
	8.96	_	24	8.96	10	100	100	
15	-	0.56	24	2.24	75	65	100	
	-	0.56	24	8.96	65	55	20	
	8.96	0.56	24	2.24	80	95	100	
20	8.96	0.56	24	8.96	80	100	100	
	-	_	4	8.96	0	0	0	
	8.96	-	4	2.24	0	100	100	
	8.96	-	4	8.96	0	95	100	
25	~	0.56	4	2.24	75	60	100	
	-	0.56	4	8.96	75	65	95	
	8.96	0.56	4	2.24	95	100	100	
30	8.96	0.56	4	8.96	90	100	100	
	-	-	5	8.96	5	100	60	
	8.96	-	5	2.24	15	100	100	
35	8.96	-	5	8.96	25	100	100	
33	-	0.56	5	2.24	75	90	95	
	-	0.56	5	8.96	50	100	100	
	8.96	0.56	5	2.24	70	100	100	
40	8.96	0.56	5	8.96	80	100	100	
	-	-	7	8.96	0	100	0	
	8.96	-	7	2.24	0	100	100	
45	8.96	_	7	8.96	25	100	100	
	-	0.56	7	2.24	80	100	100	
	-	0.56	7	8.96	65	100	100	
	8.96	0.56	7	2.24	90	100	100	
50	8.96	0.56	7	8.96	75	100	100	
	-	-	9	8.96	0	0	30	
	8.96	-	9	2.24	0	100	100	

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Table 6 (continued)

	Herbic							
5	Metolachlor No. 4			tidote		<u>% Injury</u>		
	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG	
	8.96	-	9	8.96	0	100	100	
	-	0.56	9	2.24	70	100	100	
10	-	0.56	9	8.96	80	100	100	
	8.96	0.56	9	2.24	80	100	100	
	8.96	0.56	9	8.96	80	100	100	
15	~	-	13	8.96	50	0	0	
	8.96	-	13	2.24	0	95	100	
	8.96	-	13	8.96	0	100	100	
20	-	0.56	13	2.24	75	85	95	
20	-	0.56	13	8.96	65	65	95	
	8.96	0.56	13	2.24	90	100	100	
	8.96	0.56	13	8.96	75	100	100	
25	-	-	18	8.96	0	50	85	
	8.96	***	18	2.24	0	100	100	
	8.96	-	18	8.96	0	100	100	
30	-	0.56	18	2.24	80	80	95	
	-	0.56	18	8.96	80	95	95	
	8.96	0.56	18	2.24	95	100	100	
	8.96	0.56	18	8.96	85	100	100	
35	-	-	19	8.96	10	0	0	
	8.96	-	19	2.24	5	95	100	
	8.96	-	19	8.96	0	95	100	
40	-	0.56	19	2.24	50	95	95	
	-	0.56	19	8.96	75	85	95	
	8.96	0.56	19	2.24	95	100	100	
45	8.96	0.56	19	8.96	60	100	100	

Although injury to corn was in most instances severe, some safening was observed. For example, 8.98 kg/ha of Antidote No. 19 reduced herbicidal injury from 95% to 60% against a combination of 8.96 kg/ha of metolachlor and 0.56 kg/ha of imazethapyr. It was concluded that the test rates for these herbicides were too high due to their high unit activity and that increased antidote :herbicide ratios would further enhance antidotal activity and crop plant protection.

### Example 11

This example illustrates the safening effect of several antidotes against a combination of Herbicide No. 5 (AC-263222) with metolachlor as the co-herbicide.

The procedur of this example was the same as described in the prec ding example, including the crop and weeds and number of r plications to btain the stated percent injury average values. However, the appli-

cation rate of the imidazolinone compound was reduced in view of other data indicating high unit activity for this class of compounds requiring smaller amounts thereof and/or higher antidote :h rbicide ratios. Test data ar shown in Table 7.

Table 7

	Herbic	·					
	Metolachlo	Metolachlor No. 5		tidote	% Injury		
10	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG
	8.96	-	-		52	100	100
	-	0.56	-	-	28	75	95
15	8.96	0.56	-	~	93	100	100
	-	-	1	8.96	10	0	0
	8.96	-	1	2.24	5	95	100
	8.96	••	1	8.96	10	90	100
20		0.56	1	2.24	25	65	95
	-	0.56	1	8.96	15	80	85
	8.96	0.56	1	2.24	85	100	100

# Table 7 (continued)

	Herbi		_				
5	Metolachl			tidote Kg/Ha		( Injui RRP	BYG
	Rate	(Kg/Ha)	No.	ку/па	Corn	<u> </u>	
	8.96	0.56	1	8.96	90	100	100
	-	-	22	8.96	0	0	0
10	8.96	-	22	2.24	0	95	100
	8.96	-	22	8.96	0	95	100
	-	0.56	22	2.24	40	85	95
15	-	0.56	22	8.96	60	85	95
	8.96	0.56	22	2.24	65	100	100
	8.96	0.56	22	8.96	30	100	100
	•	-	24	8.96	0	0	0
20	8.96	-	24	2.24	0	100	100
	8.96	-	24	8.96	15	100	100
	-	0.56	24	2.24	10	100	90
25	-	0.56	24	8.96	40	55	90
	8.96	0.56	24	2.24	45	100	100
	8.96	0.56	24	8.96	30	100	100
30	-	-	4	8.96	5	0	0
50	8.96	-	4	2.24	15	85	100
	8.96	-	4	8.96	10	95	100
	_	0.56	4	2.24	20	60	80
35	-	0.56	4	8.96	25	45	85
	8.96	0.56	4	2.24	60	100	100
	8.96	0.56	4	8.96	60	100	100
40	-		5	8.96	5	100	0
	8.96	-	5	2.24	25	95	100
	8.96	-	5	8.96	20	95	100
	-	0.56	5	2.24	10	70	70
45	•	0.56	5	8.96	15	90	90
	8.96	0.56	5	2.24	25	100	100
	8.96	0.56	5	8.96	0	85	0
50	-	-	7	8.96	0	85	0
	8.96	-	7	2.24	30	95	100
	8.96	-	7	8.96	5	100	100
55	-	0.56	7	2.24	60	100	100

Table 7 (continued)

	Herbic Metolachlo		200	+:2-+-		o/ *	
5	Rate	(Kg/Ha)	No.	tidote Kg/Ha	Corn	% Inju	BYG
				119/114	00111	IULE	BIG
	-	-	7	8.96	25	100	100
	8.96	0.56	7	2.24	45	100	100
10	8.96	0.56	7	8.96	25	100	100
	-	-	9	8.96	0	90	15
	8.96	-	9	2.24	0	100	100
15	8.96	-	9	8.96	0	100	100
	-	0.56	9	2.24	0	70	80
	-	0.56	9	8.96	10	90	90
20	8.96	0.56	9	2.24	75	100	100
20	8.96	0.56	9	8.96	75	100	100
	-	-	13	8.96	0	0	0
	8.96	-	13	2.24	10	100	100
25	8.96	-	13	8.96	5	100	100
	-	0.56	13	2.24	5	50	80
	-	0.56	13	8.96	15	90	90
30	8.96	0.56	13	2.24	60	100	100
	8.96	0.56	13	8.96	60	100	100
	-	-	18	8.96	0	0	0
	8.96	-	18	2.24	5	95	100
35	8.96	-	18	8.96	5	100	100
	-	0.56	18	2.24	15	85	90
	-	0.56	18	8.96	10	95	90
40	8.96	0.56	18	2.24	70	100	100
	8.96	0.56	18	8.96	65	100	100
	-	-	19	8.96	10	0	0
	8.96	. •	19	2.24	10	95	100
45	8.96	-	19	8.96	0	100	100
	-	0.56	19	2.24	0	80	80
	-	0.56	19	8.96	35	85	90
50	8.96	0.56	19	2.24	10	100	100
	8.96	0.56	19	8.96	40	100	100

Again, as in the preceding table, it is never test that while crop injury was severe with many combinations of the test herbicides, a number of antidates were found to demonstrate safening affect against some of those combinations. Again, Antidote No. 19 was most efficacious, reducing horbicidal injury to corn from 93% to 10% at the 2.24 kg/ha rate against a combination of metolachlor at 8.96 kg/ha mixed with 0.56 kg/ha of AC-263222. Further adjustments in antidote-to-herbicide rates are indicated as desirable.

# Exampl 12

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This xampl describes the antidotal effect of various antidotal compounds against imazaquin and metolachlor as co-herbicide.

The test procedure used in this example was the same as that described in Example 11. Test data for the experiments in this example are shown in Table 8.

Table 8

10	Herbi	cide		•				
		or No. 5	An	Antidote		% Injury		
	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG	
15	8.96	_	-	_	28	95	100	
	-	-	-	-	8	12	23	
	8.96	0.07	-	-	40	100	100	
	-	-	1	8.96	15	0	0	
20	8.96	-	1	2.24	0	100	100	
	8.96	-	1	8.96	0	100	100	
	-	0.07	1	2.24	0	25	10	
25	-	0.07	1	8.96	0	20	80	
	8.96	0.07	1	2.24	0	100	100	
	8.96	0.07	1	8.96	0	10	100	
30	-	-	3	8.96	0	0	0	
	8.96	-	3	2.24	15	95	100	
	8.96	-	3	8.96	0	100	100	

# Table 8 (continued)

5		icide	_				
	Metolach Rate			tidote_		Inju	
		(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG
	-	0.07	3	2.24	0	10	20
10	-	0.07	3	8.96	0	0	0
	8.96	0.07	3	2.24	25	100	100
	8.96	0.07	3	8.96	15	100	100
15	-	-	5	8.96	0	0	0
	8.96	-	5	2.24	30	90	100
	8.96	-	5	8.96	10	100	100
	•••	0.07	5	2.24	0	50	75
20	-	0.07	5	8.96	0	85	10
	8.96	0.07	5	2.24	20	100	100
	8.96	0.07	5	8.96	0	100	100
25	-	-	4	8.96	0	0	0
	8.96	-	4	2.24	0	100	100
	8.96	-	4	8.96	15	100	100
30	-	0.07	4	2.24	0	10	10
	-	0.07	4	8.96	0	15	25
	8.96	0.07	4	2.24	0	100	100
	8.96	0.07	4	8.96	10	100	100
35		-	9	8.96	0	0	0
	8.96	-	9	2.24	15	100	100
	8.96	-	9	8.96	0	100	100
40	-	0.07	9	2.24	5	55	80
	-	0.07	9	8.96	0	40	10
	8.96	0.07	9	2.24	0	100	100
45	8.96	0.07	9	8.96	5	100	100
45	-	-	13	8.96	0	0	0
	8.96	-	13	2.24	0	100	100
	8.96	-	13	8.96	0	100	100
50	-	0.07	13	2.24	5	80	15
	-	0.07	13	8.96	5	100	5
	8.96	0.07	13	2.24	0	100	100
55	8.96	0.07	13	8.96	0	100	100

# Table 8 (continued)

5	Herbicide						
5	Metolachlo		An	tidote		% Inju	ry
	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG
	-	-	18	8.96	0	80	٥
10	8.96	_	18	2.24	0	100	100
	8.96	-	18	8.96	5	100	100
	-	0.07	18	2.24	0	65	25
	-	0.07	18	8.96	0	70	85
15	8.96	0.07	18	2.24	0	100	100
	8.96	0.07	18	8.96	0	100	100
		-	19	8.96	0	0	0
20	8.96	-	19	2.24	0	90	100
	8.96	-	19	8.96	0	100	100
	-	0.07	19	2.24	5	85	25
25	-	0.07	19	8.96	10	10	25
	8.96	0.07	19	2.24	10	100	100
	8.96	0.07	19	8.96	0	95	100

In the test of Example 12 the data in Table 8 show that good safening against the imazequin/metolachlor combination while maintaining good weed control. This improved safening effect may be due in part to reduced rates of the high unit activity of imazaquin resulting in higher antidote :herbicide ratios.

## Example 13

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In the test described in this example, an objective was to determine the antidotal effect of a variety of antidotes on the combination of imazaquin containing acetochlor as co-herbicide. The test procedure here was the same as in preceding examples, but using an application rate of 0.14 kg/ha of the imidazoline and 4.48 kg/ha of acetochlor. Test results are shown in Table 9.

Table 9

5	<u>Herbic</u> Metolachlo		An	tidote	•	% Injur	~v
	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG
	4.48	-	-	_	40	100	100
10	-	0.14	-	-	95	83	88
	4.48	0.14	_	•	100	100	100
	-	-	3	8.96	5	0	0
15	4.48	-	3	0.56	5	100	100
	4.48	-	3	2.24	0	100	100
	4.48	-	3	8.96	0	100	100
	_	0.14	3	0.56	65	50	95
20	-	0.14	3	2.24	95	100	85
	-	0.14	3	8.96	85	35	95
	4.48	0.14	3	0.56	95	95	100
25	4.48	0.14	3	2.24	95	95	100
	4.48	0.14	3	8.96	90	100	100
	-	-	5	8.96	0	0	0
	4.48	-	5	0.56	25	95	100
30	4.48	-	5	2.24	15	100	95
	4.48	-	5	8.96	5	100	100
	-	0.14	5	0.56	80	90	10
35	-	0.14	5	2.24	90	90	50
	-	0.14	5	8.96	75	85	85
	4.48	0.14	5	0.56	95	95	100
40	4.48	0.14	5	2.24	95	100	100
	4.48	0.14	5	8.96	85	100	100
	-	_	4	8.96	0	0	85
	4.48	-	4	0.56	0	100	100
45	4.48	<b>-</b> .	4	2.24	0	100	100
	4.48	-	4	8.96	0	90	100
	-	0.14	4	0.56	30	100	95
50	-	0.14	4	2.24	45	95	95
	-	0.14	4	8.96	45	95	90
	4.48	0.14	4	0.56	90	100	100
55	4.48	0.14	4	2.24	90	90	100

# Table 9 (continued)

5	Herbio Metolachlo		An	ntidote		% Inju	rv
	Rate	(Kg/Ha)	No.	Kg/Ha	Corn	RRP	BYG
	4.48	0.14	4	8.96	90	100	100
10	4.48	-	9	8.96	0	90	0
	4.48	~	9	0.56	0	95	100
	4.48	-	9	2.24	5	90	100
	4.48	-	9	8.96	0	50	100
15	-	0.14	9	8.96	80	90	80
	-	0.14	9	2.24	60	100	95
	_	0.14	9	8.96	60	100	95
20	4.48	0.14	9	0.56	95	95	100
	4.48	0.14	9	2.24	95	95	100
	4.48	0.14	9	8.96	70	95	100
	-	-	13	8.96	0	0	0
25	4.48	_	13	0.56	0	100	100
	4.48	-	13	2.24	0	100	100
	4.48	-	13	8.96	0	95	100
30	-	0.14	13	0.56	95	85	95
	-	0.14	13	2.24	70	95	80
	-	0.14	13	8.96	45	90	0
35	4.48	0.14	13	0.56	95	95	100
	4.48	0.14	13	2.24	95	100	100
	4.48	0.14	13	8.96	60	100	100
	-	-	18	8.96	0	50	0
40	4.48	-	18	0.56	0	90	100
	4.48	-	18	2.24	0	95	100
	4.48	-	18	8.96	0	70	100
45	-	0.14	18	0.56	80	100	0
	-	0.14	18	2.24	85	100	95
	•	0.14	18	8.96	35	35	80
50	4.48	0.14	18	0.56	95	100	100
30	4.48	0.14	18	2.24	90	100	100
	4.48	0.14	18	8.96	95	100	100

The data in Table 9 indicate high corn injury making antidote valuation difficult. However, Antidote No. 19 was again the most active compound in the test, exhibiting moderate safening of the herbicidal combination of 4.48 kg/ha of acetochlor and 0.14 kg/ha of imazaquin from 100% to 65% at 0.56 kg/ha.

Herbicidal formulations of the types described above may be exemplified in several illustrativ embodi-

ments below.

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# I. Suspension Concentrates

Weight Percent A. Imazaquin 16.0 AD-67 16.0 10 Nonylphenol ethoxylate 9.5 mole EO Sterox NJ 5.8 Sodium lignosulfonate 15 (Reax 88B) 4.2 Water 58.0 100.0 20 B. Imazapyr 32.5 Antidote No. 1 11.0 Potassium salt of napthalene 25 sulfonate formaldehyde condensate (DAXAD 11g) 3.0 Nonylphenol ethoxylate 30 10 mole EO (Igepal CO-660) 4.0 Water 49.5 35 100.0

			Weight Percent
	c.	AC-222293	10.0
5		Antidote No. 4	15.0
·		Sodium dioctyl sulfosuccinate	:
		Aerosol OT-B	3.0
		Castor oil + 36 Ethylene	
10		oxide (FloMo 3G)	4.0
		Methanol	70.0
			100.0
15			
		II. <u>Suspoemulsions</u>	
	A.	Imazethyr	10.0
20		AD-67	15.0
		Acetochlor	20.0
		Calcium dodecylbenzene	
25		sulfonate/polyoxyethylene	
		ethers blend (e.g.,	
		Atlox= 3437F)	5.0
30		Calcium dodecylbenzene	
~		sulfonate (FloMo 60H)	2.0
		Sodium salt of a polymerized	
		alkyl napthalene sulfonic a	cid
35		(Daxad 1G)	3.0
		Water	<u>45.0</u>
			100.0
40	в.	Imazethapyr	20.0
		Antidote No. 1	25.0
		Metolachlor	15.0
45		Calcium dodecyl sulfonate/	
		alkylaryl polyether alcohol	L
		blend	4.0
50		Sodium Lignosulfonate	
		(Marasperse N-22)	2.10
		Water	34.0
			700 0

			Weight Percent
	C.	AC-263222	15.0
5		Antidote No. 19	11.25
		Metolachlor	30.0
		Calcium dodecylbenzene	
10		sulfonate/polyoxyethylene	
10		ethers blend (Atlox® 3437F)	4.0
		Sodium dioctyl sulfosuccinate	<b>:</b>
		Aerosol OT	3.0
15		Water	36.75
			100.0
20	D.	Imazaquin	10.0
		Antidote No. 13	10.0
		Acetochlor	25.0
Ω		Atlox 3437F	4.0
25		Sodium salt of a condensed	
		napthalene sulfonic acid	
		(Tamol SN)	3.0
30		Water	48.0
			100.0
	-		
35	E.	Imazaquin	2.5
		Antidote No. 18	15.0
		Alachlor	10.0
		Monochlorobenzene	4.0
40		Atlox 3437F	4.0
		Sodium lignosulfonate	
		(Reax 88B)	3.0
45		Water	<u>61.5</u>
			100.0
50		III. Liquid Concentrat	es
~			
	A.	AC-263222	10.0
		Antidote No. 9	20.0
55		Xylene	70.0
			100.0

			Weight Percent
	B.	Imazethapyr	25.0
5		Antidote No. 13	25.0
5		Dimethyl sulfoxide	50.0
			100.0
10	c.	AC-222293	30.0
		Antidote No. 1	40.0
		N-methylpyrrolidone	30.0
15			100.0
	D.	·	5.0
		Antidote No. 4	10.0
20		Ethoxylated castor oil	15.0
		Rhodamine B	.5
		Dimethylformamide	<u>69.5</u>
25			100.0
	E.	Imazaquin Sodium salt	5.0
30		Acetochlor	15.0
•		Atlox 3437F	5.0
		Water	75.0
			100.0
35			
	F.	Imazapyr sodium salt	10.0
		Antidote No. 19	20.0
40		Metolachlor	15.0
		Calcium dodecylsulfonate	
		polyether alcohol blend	4.0
45		Water	51.0
<b>₩</b> 3			100.0

# Weight Percent

5		IV. <u>Wettable Powders</u>	
	A.	Imazaquin	35.0
10		Antidote No. 6	25.0
		Sodium lignosulfonate	3.0
		Sodium N-methyl-N-oleyl-taurate	1.0
		Amorphous silica (synthetic)	36.0
15			100.0
	В.	AC-222293	15.0
		Antidote No. 2	20.0
20		Sodium dioctyl sulfosuccinate	2.75
		Calcium lignosulfonate	1.25
		Amorphous silica synthetic	51.00
25			100.0
	c.	AC-263222	10.0
30		Antidote No. 4	15.0
		Sodium lignosulfonate	2.0
30		Sodium N-methyl-N-oleyl-	
		taurate	1.0
		Kaolinite clay	72.0
35			100.0

			Weight Percent
		V. <u>Dusts</u>	
5			
	A.	Imazapyr	2.0
		Antidote No. 5	5.0
•		Attapulgite	93.0
10			100.0
	в.	Imazethapyr	10.0
15		Antidote No. 18	30.0
		Montmorillonite	60.0
			100.0
20	_	_	
_	c.	Imazaquin	15.0
		Antidote No. 18	15.0
		Bentonite	70.0
25			100.0
	D.	Imazapyr	2.0
•		Antidote No. 19	10.0
30		Diatomaceous earth	78.0
			100.0
35		VI. <u>Granules</u>	
	A.	Imazaquin .	8.0
40		Antidote No. 13	16.0
		Granular attapulgite (20/40 m	
			100.0
45			
50			

			Weight Percent
5	B.	Imazapyr	12.0
5		Antidote No. 15	15.0
		Diatomaceous earth 20/40	<u>73.0</u>
			100.0
10			
	c.	Imazethapyr	5.0
		Antidote No. 20	10.0
15		Bentonite (20/40)	85.0
			100.0
	D.	AC-222293	15.0
20		Antidote No. 35	15.0
		Pyrophyllite (20/40)	70.0
		·	100.0
25			
		VII. <u>Microcapsules</u>	
	A.	Imazaquin	5.0
30		Acetochlor encapsulated in a	
		polyurea shell wall	16.0
		Antidote No. 19	20.0
35		Reax® C-21	5.0
		Water	54.0
			100.0
40			

			Weight Percent
5	В.	Imazapyr Alachlor encapsulated in a	4.5
		polyurea shell wall	15.0
10		AD-67 Treax, LTM®	15.0
		Water	3.0 63.0
			100.0
15	c.	Imazethapyr	10.0
		Metolachlor encapsulated in	a
		polyurea shell wall	12.0
		Antidote No. 13	25.0
20		Reax C-21	1.0
		Water	52.0
			100.0
25			
	D.		8.0
		Acetochlor encapsulated in a	
30		polyurea shell wall	16.0
		Antidote No. 1	10.0
		Reax 880B	1.0
		Water	55.0
35			100.0

It will be understood by those skilled in the art that certain combinations of an imidazoline with a particular co-herbicide and/or antidote may be incompatible with each other in one or another liquid media, hence rendering some formulations unfeasible. For example, AC-222293 (active ingredient in ASSERT 2.5 LC herbicide) is not compatible with dicamba or amine formulations of 2,4-D or MCPA. Some of these co-herbicide combinations are known to be incompatible, but otherwise are readily determined without undue experimentation by those skilled in the art.

Suitable carriers for many of the herbicides and antidotes disclosed herein include common ketone, alcohol, hydrocarbon-based solvents, e.g., acetone, dimethyl sulfoxide, n-heptane, methanol, methylene chloride, cyclohexane, toluene, etc.

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While the invention herein has been specifically exemplified with representative imidazolinone compounds of Formula I, by acetochlor, alachlor and metolachlor as representative of the compounds of Formula IV and by various dichloroacetamide antidotes such as AD-67 and the safener of Example 3 as representative of the compounds according to Formulae II and III respectively, as well as a multiplicity of other antidotes having a variety of chemical structures, it is to be understood that other compounds within the scope of the above formulae and ther chemical classes are specifically contemplated as within the scope of this invention.

Examples of other herbicidal imidazolinone or imidazolidinon or -dione compounds within the purview of this invention which may be safened for use in various crops include the compounds disclosed in the following exemplary publications: EP Numbers 041623, 133310, 198552, 216360 and 298029; JA 1109-790, JA 1197-580A, J6 1183-272A, J6 3196-570A; and Australian published Application N. AU 8661-073A, GB 2 172 886A, and U.S. Pat int Numbers 4,188,487, 4,297,128, 4,562,257, 4,554,013, 4,647,301, 4,638,068, 4,650,514,

4,709,036, 4,749,403, 4,749,404, 4,741,767, 4,776,876 and 4,798,619.

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Th above sp cifically mentioned herbicidal compounds used as co-herbicides herein are intended merely as exemplary of the classes of herbicides which they represent. However, it is expressly contemplated that many other herbicidal compounds analogous to those represented herein having a variety of equivalent radicals substituted on the central nucleus may similarly be safened to various crop plants to a greater or lesser extent with the antidotal compounds of this invention. For example, other  $\alpha$ -haloacetanilide compounds useful as herbicides are described in U.S. Patent Numbers 3,442,945, 3,547,620, 3,830,841, 3,901,768, 4,517,011, 4,601,745, 4,319,918, 3,586,496, 3,574,746 and 4,249,935.

Herbicidally-useful thiocarbamate compounds are described in U.S. Patent Nos. 2,913,327, 3,330,643 and 3,330,821.

Other herbicidal pyridine compounds are described in U.S. Patent 4,692,184 and copending U.S. Serial Number 07/134,231 and U.S. Patent 4,826,532, both of common assignment herewith.

Herbicidally-useful heterocycyl phenyl ethers (especially pyrazolyl aryl ethers) are described in U.S. Patent 4,298,749 and copending U.S. Serial Numbers 07/175,460, entitled "Substituted 3-(4-Nitrophenoxy) Pyrazoles and Their Use As Herbicides", of common assignment herewith.

Herbicidal diphenyl ethers and nitrophenyl ethers include 2,4-dichlorophenyl 4'-nitrophenyl ether ("nitrofen"), 2-chloro-1-(3'-ethoxy-4'-nitrophenoxy)-4-trifluoromethylbenzene ("Oxyfluorfen"), 2',4'-dichlorophenyl 3-methoxy-4-nitrophenyl ether ("Chlomethoxynil"), methyl 2-[4'-(2", 4"-dichlorophenoxy)-phenoxy]-propionate, N-(2'-phenoxyethyl)-2-[5'-(2"-chloro-4"-trifluoromethylphenoxy)-phenoxyl-propionamide, 2-methoxyethyl 2-[nitro-5-(2-chloro-4-trifluoromethylphenoxy)-phenoxyl-propionate and 2-chloro-4-trifluoromethylphenyl 3'-oxazolin-2'-yl-4'-nitrophenylether.

Another generic class of agrichemically-important herbicidal compounds specifically contemplated for use as co-herbicidal compounds in combination with the antidotal compounds of this invention are the ureas and sulfonylurea derivatives. Important herbicidal ureas include 1-(benzothlazol-2-yl)-1,3-dimethyl-urea; phenylureas, for example: 3-(3-chloro-p-tolyl)-1,1-dimethylurea ("chlorotoluron"), 1,1-dimethyl-3- $(\alpha,\alpha,\alpha)$  trifluoro-m-tolyl)urea ("fluometuron"), 3-(4-bromo-3-chlorophenyl)-methoxy-1-methylurea ("chlorophenyl)-1-methoxy-1-methylurea ("metobromuron"), 3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea ("monolinuron"), 3-(4-chlorophenyl)-1,1-dimethylurea ("monolinuron"), 3-(4-chlorophenyl)-1,1-dimethylurea ("monolinuron"), 3-(4-chlorophenyl)-1,1-dimethylurea ("monolinuron"), 3-(4-chlorophenyl)-1,1-dimethylurea ("monolinuron");

Important herbicidal sulfonylureas specifically contemplated as useful as co-herbicides in compositions with the antidotal compounds of this invention include those disclosed in the following patents: U.S. Patent Numbers 4,383,113, 4,127,405, 4,481,029, 4,514,212, 4,420,325, 4,638,004, 4,675,046, 4,681,620, 4,741,760, 4,723,123, 4,411,690, 4,718,937, 4,620,868, 4,668,277, 4,592,776, 4,666,508, 4,696,695, 4,731,446 and 4,668,279; EP Numbers 084224, 173312, 190105, 256396, 264021, 264672, 142152, 244847, 176304, 177163, 187470, 187489, 184385, 232067, 234352, 189069, 224842, 249938, 246984 and 246984 and German Offen. DE 3,618,004.

Among the herbicidal sulfonylureas disclosed in one or more of the above patents which are of particular interest are mentioned the species N-[(4-methoxy-6-methylpyrimidin-2-yl)aminocarbonyl]-3-chloro-4-methoxycarbonyl-1-methylpyrazole-5-sulfonamide, N-[(4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]-3-chloro-4-methoxycarbonyl-1-methylpyrazole-5-sulfonamide,

N-[(4-methoxy-6-methylpyrimidin-2-yl)aminocarbonyl]-3-chloro-4-ethoxycarbonyl-1-methylpyrazole-5-sulfon amide, N-[(4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]-3-chloro-4-ethoxycarbonyl-1-methylpyrazole-5-sulfonamide, N-[(4-methoxy-6-methylpyrimidin-2-yl)aminocarbonyl]-3-bromo-4-ethoxycarbonyl-1-methylpyrazole-5-sulfonamide,

N-[(4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]-3-bromo-4-ethoxycarbonyl-1-methylpyrazole-5-sulfonamide and N-(methoxycarbonyl-1-phenyl sulfonyl-N'-(bis-difluoromethoxy pyrimidin-2-yl)urea.

Still other classes of herbicidal compounds contemplated for combination with imidazolinone derivatives and the antidotes of this invention include the following representative species:

Triazines and triazinones: 2,4-bis-(isopropylamino)-6-methylthio-1,3,5-triazine ("prometryn"), 2,4-bis-(ethylamino)-6-methylthio-1,3,5-triazine ("simetryn"), 2-(1',2'-dimethylpropylamino)-4-ethylamino-6-methyl-thio-1,3,5-triazine ("dimethametryn"), 2-chloro-4,6-bis-(ethylamino)-1,3,5-triazine ("simazine"), 2-tertbutylamino-4-chloro-6-ethylamino-1,3,5-triazine ("terbuthylazine"), 2-tert-butylamino-4-ethylamino-6-methylthio-1,3,5-triazine ("terbutryn"), 2-ethylamino-4-isopropylamino-6-methylthio-1,3,5-triazin ("ametryn") and

3,4-bis-(m thylamin )-6-tert-butyl-4,4-dihydro-1,2,4-triazin-5-one.

Oxadiazolones: 5-tert-butyl-3-(2',4'-dichloro-5'-isopropoxyphenyl)-1,3,4-oxadiazol-2-one ("Oxadiazon"). Ph sphates: S-2-methylpiperidin carbonylmethyl O,O-dipropyl phosphorodithioat ("Pip rophos").

Pyrazoles: 1,3-dim thyl-4-(2',4'-dichlorobenzolyl)-5-(4'-tolylsulfonyloxy)-pyrazole.

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Also  $\alpha$ -(phenoxyphenoxy)-propionic acid derivatives and  $\alpha$ -pyridyl-2-oxyphenoxy)-propionic acid derivatives.

In addition t th antidotal compounds xemplifi d herein, other representative antidotal compounds according to Formula II are expressly disclosed in various patents, e.g., 3,959,304, 4,072,688, 4,137,070, 4,124,372, 4,124,376, 4,483,706, 4,636,244, 4,033,756, 4,708,735, 4,256,481, 4,199,506, 4,251,261, 4,070,389, 4,231,783, 4,269,775, 4,152,137 and 4,294,764, and EP Nos. 0253291, 0007588, 0190105, 0229649, 16618 and W. German Patent Application Nos. 28 28 222, 28 28 293.1, and 29 30 450.5, South African Patent No. 82/7681, and PRC Application No. 102 879-87.

As will be appreciated by those skilled in the art, the practice of this invention comprises the use of the antidotal compounds disclosed and claimed herein with any herbicidally-active imidazolinone compound which may optionally be combined with co-herbicides from many different classes of chemistry. Obviously, the above listings of exemplary compounds is not intended to be exhaustive, but representative. Again, as noted earlier herein, it is expected that not every combination of herbicide and antidote will result in safening of all crops, but is within the skill of the art to test any given herbicide with an invention antidote in plant screens of any spectrum of plants and note the results.

The foregoing embodiments illustrate that the combinations of herbicide and antidote of this invention are useful in controlling weeds while reducing herbicidal injury to crop plants under greenhouse and field test conditions.

In field applications, the herbicide, antidote, or a mixture thereof, may be applied to the plant locus without any adjuvants other than a solvent. Usually, the herbicide, antidote, or a mixture thereof, is applied in conjunction with one or more adjuvants in liquid or solid form. Compositions or formulations containing mixtures of an appropriate herbicide(s) and antidote usually are prepared by admixing the herbicide and antidote with one or more adjuvants such as diluents, solvents, extenders, carriers, conditioning agents, water, wetting agents, dispersing agents, or emulsifying agents, or any suitable combination of these adjuvants. These mixtures may be in the form of emulsifiable concentrates, microencapsulates, particulate solids, granules of varying particle size, e.g., water-dispersible or water-soluble granules or larger dry granules, pellets, wettable powders, dusts, solutions, aqueous dispersions, or emulsions.

Examples of suitable adjuvants are finely-divided solid carriers and extenders including talcs, clays, pumice, silica, diatomaceous earth, quartz, Fuller's earth, sulfur, powdered cork, powdered wood, walnut flour, chalk, tobacco dust, charcoal, and the like. Typical liquid diluents include Stoddard's solvent, acetone, methylene chloride, alcohols, glycols, ethyl acetate, benzene, and the like. Liquids and wettable powders usually contain as a conditioning agent one or more surface-active agents in amounts sufficient to make a composition readily dispersible in water or in oil. The term "surface-active agent" includes wetting agents, dispersing agents, suspending agents, and emulsifying agents. Typical surface-active agents are mentioned in U.S. Patent No. 2,547,724.

Compositions of this invention generally contain from about 5 to 95 parts herbicide-and-antidote, about 1 to 50 parts surface-active agent, and about 4 to 94 parts solvent, all parts being by weight based on the total weight of the composition.

Application of the herbicide, antidote, or mixture thereof, can be carried out by conventional techniques utilizing, for example, hand-carried or tractor-mounted spreaders, power dusters, boom and hand sprayers, spray dusters, and granular applicators. If desired, application of the compositions of the invention to plants can be accomplished by incorporating the compositions in the soil or other media.

The crop may be protected by treating the crop seed with an effective amount of antidote prior to planting. Generally, smaller amounts of antidote are required to treat such seeds. A weight ratio of as little as 0.6 parts of antidote per 1000 parts of seed may be effective. The amount of antidote utilized in treating the seed may be increased if desired. Generally, however, a weight ratio of antidote-to-seed weight may range from 0.1 to 10.0 parts of antidote per 1000 parts of seed. Since only a very small amount of active antidote is usually required for the seed treatment, the compound preferably is formulated as an organic solution, powder, emulsifiable concentrate, water solution, or flowable formulation, which can be diluted with water by the seed treater for use in seed treating apparatus. Under certain conditions, it may be desirable to dissolve the antidote in an organic solvent or carrier for use as a seed treatment or the pure compound alone may be used under properly controll d conditions.

For antidote seed-coating or for antidotes applied to soil in granular or liquid formulations, suitable carriers may be either solids, such as talc, sand, clay, diatomaceous earth, sawdust, calcium carbonate, and the like, or liquids, such as water, kerosene, acetone, benzene, toluene, xylene, and the like, in which the active antidote may be either dissolved or dispersed. Emulsifying agents are used to achieve a suitable emulsion if two immiscibles liquids are used as a carrier. Wetting agents may also be used to aid in dispersing the active antidote in

liquids used as a carrier in which the antidote is not completely soluble. Emulsifying agents and wetting agents are sold under numerous tradenames and trademarks and may be ith r pur compounds, mixtures of c mpounds of the sam general groups, or they may be mixtures of compounds of different classes. Typical satisfactory surface active agents which may be used are alkali metal higher-alkylarylsulfonates such as sodium dodecylbenzenesulfonate and the sodium salts of alkylnaphthalenesulfonic acids, fatty alcohol sulfates such as the sodium salts of monoesters of sulfuric acid with n-aliphatic alcohols containing 8-18 carbon atoms, long-chain quatermary ammonium compounds, sodium salts of petroleum-derived alkylsulfonic acids, polyethylene sorbitan monooleate, alkylaryl polyether alcohols, water-soluble lignin sulfonate salts, alkali casein compositions, long-chain alcohols usually containing 10-18 carbon atoms, and condensation products of ethylene oxide with fatty acids, alkylphenols, and mercaptans.

Although this invention has been described with respect to specific embodiments, the details of these embodiments are not to be construed as limitations. Various equivalents, changes, and modifications may be made without departing from the spirit and scope of this invention, and it is understood that such equivalent embodiments are part of this invention.

Claims

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### 1. Composition comprising

(a) a herbicidally-effective amount of one or more compounds of the formula

wherein

R represents one of the radicals

wherein in Formula I and IA, the dashes represent saturation or unsaturation and in Formula I R<sub>1</sub> is H, C<sub>1-4</sub> alkyl or haloalkyl.

 $R_2$  is H,  $C_{1-6}$  alkyl,  $C_{3-6}$  cycloalkyl or cycloalkylm thyl, phenyl, haloph nyl, benzyl or  $R_1$  and  $R_2$  combined from a  $C_{3-6}$  cycl alkyl which may be substituted with  $C_{1-3}$  alkyl;

R<sub>3</sub> is H, COD<sub>1</sub> SOD<sub>2</sub> or SO<sub>2</sub>D<sub>3</sub>, wherein

 $D_1$ ,  $D_2$  and  $D_3$  are H,  $C_{1-10}$  alkyl, halomethyl or phenyl which may be substituted with halog n, NO<sub>2</sub> or C1-4 alkyl or alkoxy, said R3 being attached to the ring nitrogen atom of the isomer not having a double bond structure; and

W is oxygen or sulfur;

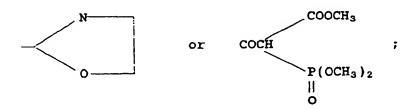
#### where in Formula IA

A is COOD<sub>4</sub>, CONHD<sub>5</sub>, COND<sub>6</sub>D<sub>7</sub>, CHO, CH<sub>2</sub>OH, COCH<sub>3</sub>, COC<sub>6</sub>H<sub>5</sub>, CN, CH<sub>3</sub>, CH=NOH, CH<sub>2</sub>COOH, CH2COOD8, CH2COOH, COHOH, CHD9OH,

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D<sub>4</sub> is H, diloweralkylimino, C<sub>1-12</sub> alkyl optionally substituted with C<sub>1-3</sub> alkoxy, halogen, OH, C<sub>3-6</sub> cycloalkyl or cycloalkylmethyl; benzyl, benzyloxy, C<sub>1-4</sub> alkyl or alkoxy, nitro or carboxyl; furyl, tetrahydrofuryl, dialkylphosphonyl, glycidyl, COC<sub>1-4</sub> alkoxy, CN, phenyl, benzyl, NH(C<sub>1-4</sub> alkyl)<sub>3</sub>, C<sub>3-12</sub> alkenyl or alkynyl, both optionally substituted with C1-3 alkoxy, phenyl, halogen or COC1-4 alkoxy; C3-6 cycloalkyl or cycloalkylmethyl, both optionally substituted with C1-3 alkyl; or a cation selected from alkali and alkaline earth metals, Mn, Cn, Fe, Zn, Co, Pb, Ag, Ni, ammonium and organic ammonium;

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D<sub>5</sub> is H, OH, NH<sub>2</sub>, N(CH<sub>3</sub>)<sub>2</sub>, NHCOCH<sub>3</sub>, C<sub>6</sub>H<sub>5</sub>NH<sub>2</sub>,C<sub>3-5</sub> alkenyl or alkynyl or C<sub>1-4</sub> alkyl optionally substituted with OH or halogen;

D<sub>6</sub>, D<sub>7</sub> and D<sub>8</sub> are H, OH or C<sub>1-4</sub> alkyl;

B is N or -CH-;

m is 0-3; and

R<sub>4</sub> is H, halogen, C<sub>1-6</sub> alkyl, alkoxy, alkylthio, haloalkyl, or hydroxyalkyl; NO<sub>2</sub>, CN, phenyl or phenoxyl, both optionally substituted with C1-4 alkyl, alkoxy or alkoxyalkyl or halogen; SD9 or OD10

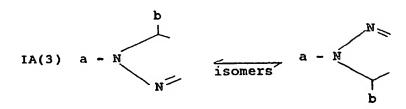
 $D_9$  is H, phenyl or phenyl substituted with halogen,  $C_{1-3}$  alkyl or alkoxy,  $NO_2$ ; pyridyl or  $C_{1-3}$  alkyl-substituted pyridyl; C2-8 alkyl, alkoxy or polyalkoxy; C3-8 cycloalkyl or heterocyclyl containing O, S or N atoms both of which may be substituted with  $C_{1-4}$  alkyl, alkoxy or halogen;  $C_{5-8}$  cycloalkenyl, and D<sub>10</sub> is H, C<sub>3-8</sub> cycloalkyl or heterocyclyl containing O, S or N atoms both of which may be substituted as in D<sub>8</sub> or C<sub>5-8</sub> cycloalkenyl;

when B is N, two R4 radicals may be combined to form a radical having one of the following formulae :

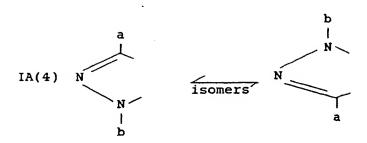
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IA(1)  ${CH=CH^{\frac{1}{m}}}$ , where m is 2 or 3;  $IA(2) - (CH_2)_n$  -, where n is 2-4;

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where in formula IA(3) and IA(4)

a is H,  $C_{1-4}$  alkyl, alkoxyalkyl or haloalkyl,  $C_{5-8}$  cycloalkyl, cycloalkylmethyl, phenyl, benzyl, acyl, pyridyl, alkyl- or arylsulfonyl and

b is H, C<sub>1-4</sub> alkyl, alkoxy, halogen, NO<sub>2</sub>, NH<sub>2</sub>, CN, phenyl or benzyl or

a and b radicals substituted with C1-4 alkyl, haloalkyl, alkoxy, halogen, NO2 or NH2;

provided that when R<sub>4</sub> is a radical of the formula IA(3), the ring to which it is attached has only two unsaturated bonds;

IA(5) C (C)e

wherein

e and f are 0-2 and e + f = 2;

c and d are halogen,  $C_{1-4}$  alkyl, alkoxy, haloalkyl, hydroxyalkyl, alkylthio, alkylsulphonyl, acyl or alkoxycarbonyl;  $C_{3-6}$  cycloalkyl, cycloalkylmethyl or halocycloalkylmethyl;  $C_{2-6}$  alkenyl, haloalkenyl, alkynyl or haloalkynyl; phenyl, benzyl or pyridyl and when e or f is 0 and the other is 2, c and d can form a ring;

1A(6) (E)<sub>4</sub>
(G)

wherein

g is 0-6

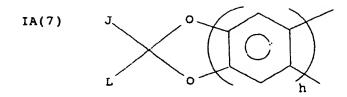
one of the E members is O, S, SO, SO<sub>2</sub>,  $ND_{11}$ , -CO- or =CH-, the other E members being C atoms, provided that when one E is =C- there is only one double bond in the (E)<sub>4</sub> ring and when the E member is not =C-, there may or may not be one double bond in that ring;

D<sub>11</sub> is H or C<sub>1-3</sub> alkyl and

G is the same as an uncombined, discrete  $R_4$  member in formula IA or tetrahydropyranyl, OH,  $CF_3$ , phenyl, benzyl or pyridyl or phenyl-, benzyl- or pyridyl-substituted with  $C_{1-4}$  alkyl, alkoxy, alkylthio,  $CF_3$ ,  $NO_2$  or halogen;

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wherein

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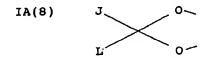
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h = 0 or 1:

J and L are H, C<sub>1-8</sub> alkyl or cycloalkyl, both of which may be substitued with C<sub>1-3</sub> alkyl, alkoxy, hlogen; when B in formula IA is -CH-,

 $R_4$  is H, halogen, NO<sub>2</sub>,  $C_{1-3}$  alkyl, haloalkyl, alkoxy,  $C_{1-6}$  alkoxyalkyl or two  $R_4$  members together form the radical



where J and L are as defined in Formula IA(7);

where in Formula IB, (-) (+)

 $R_6$  is  $C_{1-\delta}$  alkoxy,  $NH_2$ , -O-NHD<sub>12</sub>D<sub>13</sub>, or OM;

wherein  $D_{12}$  and  $D_{13}$  are H or  $C_{1-4}$  alkyl, and M is an alkali metal or alkaline earth metal and where in Formula IC,

Re and R7 are H or C1-4 alkyl, and

X is OH, OD<sub>14</sub>,  $N(C_{1-3} \text{ alkyl})_2$ ,

N(CH<sub>2</sub>CH<sub>2</sub>OCH<sub>3</sub>)<sub>2</sub>, NHD<sub>15</sub> or one of the following radicals:

wherein

II

 $D_{14}$  is  $C_{1-8}$  alkyl or haloalkyl,  $C_{3-12}$  alkenyl or alkynyl,  $C_{2-12}$  alkoxyalkyl or haloalkoxyalkyl, phenyl, phenoxy, phenyl- $C_{1-8}$  alkyl, phenoxy- $C_{1-8}$ -alkyl, a salt-forming cation from ammonium, organic ammonium, alkali and alkaline earth metals, Mn, Cu, Fe, Zn, Co, Pb, Ag, Al or Ni; and

 $D_{15}$  is H, OH,  $C_{3-8}$  cycloalkyl,  $C_{1-12}$  alkyl, haloalkyl, hydroxyalkyl, cyanoalkyl, carbamoylalkyl,  $C_{3-12}$  alkenyl, haloalkenyl, haloalkynyl, haloalkynyl,  $C_{6-12}$  aryl or aryl- $C_{1-6}$  alkyl or alkoxy,  $C_{1-3}$  alkoxycarbonyl- $C_{1-6}$  alkyl, furyl, or tetrahydrofuryl; and

(b) an antidotally-effective amount of (i) a compound of the formula

$$R_{10} - C - N$$

$$R_{11}$$

wherein R<sub>10</sub> can be selected from the group consisting of hal alkyl; hal alk nyl; alkyl; alkenyl; cycloalkyl; cycloalkylalkyl; halogen; hydrogen; carboalkoxy; N-alkenylcarbamylalkyl; N-alkenylcarbamylalkyl; N-alkynylcarbamylalkyl; N-alkynylcarbamylalkoxyalkyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; alkynoxy; haloalkoxy; thiocyanatoalkyl; alkenylaminoalkyl; alkylcarboalkyl; cyanatoalkyl; alkenylaminosulfonoalkyl; alkylthioalkyl; haloalkylcarb nyloxyalkyl;

alkoxycarboalkyl; haloalkenylcarbonyloxyalkyl; hydroxyhaloalkyloxyalkyl; hydroxyalkylcarboalky xyalkyl; hydroxyalkyl; alkoxysulfonoalkyl; furyl, thienyl; alkyldithi ! nyl; thienalkyl; phenyl and substituted phenyl wherein said substituents can b selected from halogen, alkyl, hal alkyl, alkoxy, carbamyl, nitro, carboxylic acids and their salts, haloalkylcarbamyl; phenylalkyl; phenylhaloalkyl; phenylalkenyl; substituted phenylalkenyl wherein said substituents can be selected from halogen, alkyl, alkoxy, halophenoxy, phenylalkoxy; phenylalkylcarboxyalkyl; phenylcycloalkyl; halophenoxyalkyl; halophenoxyalkyl; bicycloalkyl; alkenylcarbamylpyridinyl; alkynylcarbamylpyridinyl; dialkenylcarbamylbicycloalkenyl; alkynylcarbamylbicycloalkenyl;

R<sub>11</sub> and R<sub>12</sub> can be the same or different and can be selected from the group consisting of alkenyl; haloalkenyl; hydrogen; alkyl; haloalkyl; alkenyl; cyanoalkyl; hydroxyalkyl; hydroxyhaloalkyl; haloalkylcarboxyalkyl; alkylcarboxyalkyl; alkoxycarboxyalkyl; thioalkylcarboxyalkyl; alkoxycarboalkyl; alkylcarbamyloxyalkyl; amino; formyl; haloalkyl-N-alkylamido; haloalkylamido; haloalkylamidoalkyl; haloalkyl-N-alkylamidoalkyl; haloalkylamidoalkenyl; alkylimino; cycloalkyl; alkylcycloalkyl; alkoxyalkyl; alkyisulfonyloxyalkyi; mercaptoalkyi; alkylaminoalkyi; alkoxycarboalkenyi; haloalkylcarbonyi; alkylcarbonyl; alkenylcarbamyloxyalkyl; cycloalkylcarbamyloxyalkyl; alkoxycarbonyl; haloalkoxycarbonyl; halophenylcarbamyloxyalkyl; cycloalkenyl; phenyl; substituted phenyl wherein said substituents can be selected from alkyl, halogen, haloalkyl, alkoxy, haloalkylamido, phthalamido, hydroxy, alkylcarbamyloxy, alkenylcarbamyloxy, alkylamido, haloalkylamido or alkylcarboalkenyl; phenylsulfonyl; substituted phenylalkyl wherein said substituents can be selected from halogen or alkyl; dioxyalkylene, halophenoxyalkylamidoalkyl; alkylthiodiazolyl; piperidyl; piperidylalkyl; dioxolanylalkyl, thiazolyl; alkylthiazolyl ; benzothiazolyl ; halobenzothiazolyl ; furyl ; alkyl-substituted furyl ; furylalkyl ; pyridyl ; alkylpyrialkyloxazolyl; tetrahydrofurylaikyi; 3-cyano, thienyl; alkyl-substituted 4,5-polyalkylene-thienyl;  $\alpha$ -haloalkylacetamidophenylalkyl;  $\alpha$ -haloalkylacetamidonitrophenylalkyl;  $\alpha$ haloalkylacetamidohalophenylalkyl; cyanoalkenyl;

R<sub>11</sub> and R<sub>12</sub> when taken together can form a structure consisting of piperidinyl; alkylpiperidinyl; pyridyl; di- or tetrahydropyridinyl; alkyltetrahydropyridyl; morpholyl; alkylmorpholyl; azabicyclononyl; diazacycloalkanyl, benzoalkylpyrrolidinyl; oxazolidinyl; perhydrooxazolidinyl; alkyloxazolidyl; furyloxazolidinyl, thienyloxazolidinyl, pyridyloxazolidinyl, pyrimidinyloxazolidinyl, benzooxazolidinyl, C<sub>3</sub> <sub>7</sub> spirocycloalkyloxazolidinyl, alkylaminoalkenyl; alkylideneimino; pyrrolidinyl; piperidonyl; perhydroazepinyl; perhydroazepinyl; perhydroazepinyl; perhydroazepinyl; piperazinyl; perhydro-1,4-diazepinyl; quinolinyl, isoquinolinyl; di-, tetra- and perhydroquinolyl- or -isoquinolyl; indolyl and di- and perhydroindolyl and said combined R<sub>11</sub> and R<sub>12</sub> members substituted with those independent R<sub>11</sub> and R<sub>12</sub> radicals enumerated above;

(ii) one of the following compounds

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α-[(Cyanomethoxy)imino]benzeneacetonitrile,

 $\alpha$ -[(1,3-Dioxopyran-2-yl-methoxy)-imino]-benzeneacetonitrile,

5-Thiazolecarboxylic acid, 2-chloro-4-trifluoromethyl, benzyl ester,

Benzenemethamine, N-[4-(dichloromethylene]-1,3-ditholan-2-ylidene]-α-methyl, hydrochloride,

Diphenylmethoxy acetic acid, methyl ester, 1,8-Naphthalic anhydride, 4,6-Dichloro-2-phenyl-pyrimidine, 2-Chloro-N-[1-(2,4,6-trimethylphenyl)-ethenyllacetamide.

Ethylene glycol acetal of 1.1-dichloroacetone:

provided that when the Compound of Formula I is imazaquin, the antidotal compound is other than 1,8-na-phthalic anhydride, oxabetrinil, flurazole or N,N-diallyl dichloroacetamide and when the compound of Formula I is imazethapyr, the antidotal compound is other than 1,8-naphthalic anhydride.

- 2. Composition according to Claim 1 wherein R is the radical of Formula IA.
- Composition of Claim 2 wherein R₁ and R₂ are C₁ alkyl or haloalkyl, R₃ is H and W is 0.
- Composition according to Claim 3 wherein A is COOD<sub>4</sub>, wherein D<sub>4</sub> is H, a C<sub>1-12</sub> alkyl radical or an ammonium cation.
  - 5. Composition according to Claim 4 wherein B is the N atom.
- 6. Composition according to Claim 5 wherein R<sub>4</sub> is H, C<sub>1-8</sub> alkyl, or two R<sub>4</sub> memb rs may ombin to f rm a  $\{CH=CH\}_m$  or  $\{CH_2\}_n$  radical wherein m is 2 or 3 and n is 2-4.
  - 7. Composition according to Claim 6 which is imazaquin.

- 8. Composition according to Claim 6 which is imazethapyr.
- 9. Composition according to Claim 6 which is imazapyr.
- 10. Composition according to Claim 6 which is AC-263222.

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- 19. Composition according to Claim 4 wherein B is the -CH- radical.
- 12. Composition according to Claim 11 which is AC-222293.
- 13. Composition according to Claim 1 wherein R is the radical of Formula IB.
- 14. Composition according to Claim 1 wherein R is the radical of Formula IC.
- 15. Composition according to any of Claims 1-13 or 14 wherein in Formula II for the antidote of component (b) R<sub>10</sub> is C<sub>1-3</sub> haloalkyl;

 $R_{11}$  and  $R_{12}$  are independently  $C_{2-4}$  alkenyl or haloalkenyl or 2,3-dioxolan-2-yl-methyl and  $R_{11}$  and  $R_{12}$  when combined form a  $C_{5-10}$  saturated or unsaturated heterocyclic ring containing O, S and/or N atoms and which may be substituted with  $C_{1-5}$  alkyl, haloalkyl, alkoxy, or alkoxyalkyl or haloacyl groups.

- 16. Composition according to Claim 15 wherein R is dichloromethyl.
- Composition according to Claim 16 wherein said compound of component (b) is N,N-diallyl-dichloroaceta mide.
  - 18. Composition according to Claim 16 wherein said compound of component (b) is N-(2-propenyl)-N-(1,3-dioxolanylmethyl)dichloroacetamide.
- 30 19. Composition according to Claim 16 wherein said compound of component (b) is a substituted 1,3-oxazoli-dinyl dichloroacetamide having the formula

O  $R_{13}$ Cl<sub>2</sub>CHC - N<sup>3</sup>  $R_{14}$   $R_{15}$ 

whereir

 $R_{13}$  is hydrogen,  $C_{1-4}$  alkyl, alkylol, haloalkyl or alkoxy,  $C_{2-8}$  alkoxyalkyl, phenyl or a saturated or unsaturated heterocyclic radical having  $C_{5-10}$  ring atoms and containing O, S and/or N atoms, and  $R_{14}$  and  $R_{15}$  are independently hydrogen,  $C_{1-4}$  alkyl or haloalkyl, phenyl or a heterocyclic  $R_4$  member or together with the carbon atom to which they are attached may form a  $C_3$ - $C_7$  spirocycloalkyl group.

- 20. Composition according to Claim 19 wherein  $R_{13}$  is one of said heterocyclic members and  $R_{14}$  and  $R_{15}$  are independently methyl, trifluoromethyl or when combined with the carbon atom to which attached form a  $C_5$  or  $C_6$  spirocycloalkyl radical.
- 21. Composition according to Claim 19 wherein said compound of Formula III is oxazolidine, 3-(dichloroace-tyl)-2,2,5-trimethyl-.
- 22. Composition according to Claim 19 wherein said compound of Formula III is oxazolidine, 3-(dichloroace-tyl)-2,2-spirocyclohexyl-.
  - 23. Comp sition according to Claim 19 wherein said compound of Formula III is exazolidin , 3-(dichloroace-

tyl)-2,2-dimethyl-5-ph nyl-.

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- 24. Comp sition according to Claim 20 wherein said compound of Formula III is oxazolidine, 3-(dichloroace-tyl)-2,2-dimethyl-5-(2-furanyl)-.
- 25. Composition according to Claim 20 wherein said compound of Formula III is oxazolidine, 3-dichloroacetyl-2,2-dimethyl-5-(2-thienyl)-.
- 26. Composition according to Claim 20 wherein said compound of Formula III is pyridine, 3-[3-(dichloroace-tyl)-2,2-dimethyl-5-oxazolidinyl]-.
  - 27. Composition according to Claim 16 wherein said compound of Formula II is 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine.
- 28. Composition according to Claim 16 wherein said compound of Formula II is ethanone, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolinyl)-.
  - Composition according to Claim 16 wherein said compound of Formula II is cis/trans-piperazine, 1,4-bis(dichloroacetyl)-2,5-dimethyl-.
  - 30. Composition according to Claim 16 wherein said compound of Formula II is N-(dichloroacetyl)-1,2,3,4-tet-rahydroquinaldine.
- 31. Composition according to Claim 16 wherein said compound of Formula II is 1,5-diazacyclononane, 1,5-bis(dichloroacetyl).
  - Composition according to Claim 16 wherein said compound of Formula II is 1-azaspiro[4,4]nonane, 1-(dichloroacetyl).
- 33. Composition comprising a herbicidally-effective amount of imazaquin, imazethapyr, imazapyr, AC-263222 or AC-222293 and an antidotally-effective amount of N,N-diallyl-dichloroacetamide, oxazolidine, 3-(dichloroacetyl)-, 2,2,5-trimethyl-, oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-(furanyl)-, oxazolidine, 3-(dichloroacetyl)-2,2-spirocyclohexyl-, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, cyometrinil or oxabetrinil; provided that when the Compound of Formula I is imazaquin, the antidotal compound is other than oxabetrinil or N,N-diallyl dichloroacetamide.
  - 34. Composition according to any of Claims 1-33 further containing one or more additional herbicidal compounds as co-herbicide(s) with said compound of Formula I.
- 35. Composition according to Claim 34 wherein said co-herbicide is an acetanilide of the formula

whereir

 $R_8$  is hydrogen,  $C_{1-8}$  alkyl, hałoalkyl, alkoxy ralkoxyalkyl, alk nyl, hał alkenyl, alkynyl or hal alkynyl having up t 6 carbon atoms,  $C_{5-10}$  heterocyclyl or heterocyclylm thyl having O, S and N atoms and which may b substitut d with halogen,  $C_{1-4}$  alkyl, carbonylalkyl or carbonylalkoxyalkyl, nitro, amin r cyano groups:

 $R_{9}$  is hydrog  $\,$  n, halog  $\,$  n, nitro, amino,  $C_{1-8}$  alkyl, alkoxy or alkoxyalkyl, and

i is 0-5.

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- 36. Composition according to Claim 35 wherein  $R_8$  is an alkoxyalkyl or pyrazolylalkyl group having up to 6 carbon atoms and  $R_9$  is a  $C_{1-8}$  alkyl or alkoxy radical.
- 37. Composition according to Claim 36 wherein said acetanilide is acetochlor, alachlor, butachlor, metolachlor or metazochlor.
- 38. Method for reducing phytotoxicity to crop plants due to herbicidal compounds having the formula

wherein

R represents one of the radicals

IA (R<sub>4</sub>)<sub>m</sub>

IB O C - Rs

O || IC R<sub>6</sub> - C - C - X || R<sub>7</sub> - C -

wherein in Formulae I and IA, the dashes represent saturation or unsaturation and in Formula I R<sub>1</sub> is H, C<sub>1-4</sub> alkyl or haloalkyl,

 $R_2$  is H,  $C_{1-6}$  alkyl,  $C_{3-6}$  cycloalkyl or cycloalkylmethyl, phenyl, halophenyl, benzyl or  $R_1$  and  $R_2$  combined from a  $C_{3-6}$  cycloalkyl which may be substituted with  $C_{1-3}$  alkyl;

 $R_3$  is H, COD<sub>1</sub> SOD<sub>2</sub> or SO<sub>2</sub>D<sub>3</sub>, wherein D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub> are H, C<sub>1-10</sub> alkyl, halomethyl or phenyl which may be substituted with halogen, NO<sub>2</sub> or C<sub>1-4</sub> alkyl or alkoxy, said R<sub>3</sub> being attached to the ring nitrogen atom of the isomer not having a double bond structure; and

W is oxygen or sulfur;

where in Formula IA

A is  $COOD_4$ ,  $CONHD_6$ ,  $COND_6D_7$ , CHO,  $CH_2OH$ ,  $COCH_3$ ,  $COC_6H_5$ , CN,  $CH_3$ , CH=NOH,  $CH_2COOH$ ,  $CH_2COOH$ , CONHOH,  $CHD_9OH$ ,

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 $D_4$  is H, diloweralkylimino,  $C_{1-12}$  alkyl optionally substituted with  $C_{1-3}$  alkoxy, halogen, OH,  $C_{3-8}$  cycloalkyl or cycloalkylmethyl; benzyl, benzyloxy,  $C_{1-4}$  alkyl or alkoxy, nitro or carboxyl; furyl, tetrahydrofuryl, dialkylphosphonyl, glycidyl,  $COC_{1-4}$  alkoxy, CN, phenyl, benzyl,  $NH(C_{1-4}$  alkyl)3,  $C_{3-12}$  alkenyl or alkynyl, both optionally substituted with  $C_{1-3}$  alkoxy, phenyl, halogen or  $COC_{1-4}$  alkoxy;  $C_{3-8}$  cycloalkyl or cycloalkylmethyl, both optionally substituted with  $C_{1-3}$  alkyl; or a cation selected from alkali and alkaline earth metals, Mn, Cn, Fe, Zn, Co, Pb, Ag, Ni, ammonium and organic ammonium;

 $D_5$  is H, OH, NH<sub>2</sub>, N(CH<sub>3</sub>)<sub>2</sub>, NHCOCH<sub>3</sub>,  $C_8H_5NH_2$ ,  $C_{3-5}$  alkenyl or alkynyl or  $C_{1-4}$  alkyl optionally substituted with OH or halogen;

D<sub>6</sub>, D<sub>7</sub> and D<sub>8</sub> are H, OH or C<sub>1-4</sub> alkyl;

B is N or -CH-;

m is 0-3; and

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R<sub>4</sub> is H, halogen, C<sub>1-8</sub> alkyl, alkoxy, alkylthio, haloalkyl, or hydroxyalkyl; NO<sub>2</sub>, CN, phenyl or phenoxyl, both optionally substituted with C<sub>1-4</sub> alkyl, alkoxy or alkoxyalkyl or halogen; SD<sub>9</sub> or OD<sub>10</sub> wherein

 $D_9$  is H, phenyl or phenyl substituted with halogen,  $C_{1-3}$  alkyl or alkoxy,  $NO_2$ ; pyridyl or  $C_{1-3}$  alkyl-substituted pyridyl;  $C_{2-8}$  alkyl, alkoxy or polyalkoxy;  $C_{3-8}$  cycloalkyl or heterocyclyl containing O, S or N atoms both of which may be substituted with  $C_{1-4}$  alkyl, alkoxy or halogen;  $C_{5-8}$  cycloalkenyl, and  $D_{10}$  is H,  $C_{3-8}$  cycloalkyl or heterocyclyl containing O, S or N atoms both of which may be substituted as in  $D_8$  or  $C_{5-8}$  cycloalkenyl;

when B is N, two R<sub>4</sub> radicals may be combined to form a radical having one of the following formulae :  $IA(I) \stackrel{\text{\tiny $\{CH=CH\}}_{m}}{}$ , where m is 2 or 3;

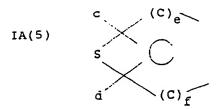
 $IA(2) - (CH_2)_{n-}$ , where n is 2-4;

where in formula IA(3) and IA(4)

a is H,  $C_{1-4}$  alkyl, alkoxyalkyl rhaloalkyl,  $C_{5-8}$  cycloalkyl, cycloalkylmethyl, phenyl, benzyl, acyl, pyridyl, alkyl- or arylsulfonyl and

b is H,  $C_{1-4}$  alkyl, alkoxy, halog n,  $NO_2$ ,  $NH_2$ , CN, phenyl or b nzyl or a and b radicals substituted with  $C_{1-4}$  alkyl, haloalkyl, alkoxy, halogen,  $NO_2$  r  $NH_2$ ;

provided that when  $R_4$  is a radical of the formula IA(3), the ring to which it is attached has only two unsaturated bonds;



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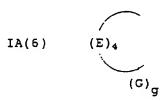
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e and f are 0-2 and e + f = 2;

c and d are halogen, C<sub>1-4</sub> alkyl, alkoxy, haloalkyl, hydroxyalkyl, alkylthio, alkylsulphonyl, acyl or alkoxycarbonyl;

 $C_{3-6}$  cycloalkyl, cycloalkylmethyl or halocycloalkylmethyl;  $C_{2-6}$  alkenyl, haloalkenyl, alkynyl or haloalkynyl; phenyl, benzyl or pyridyl and when e or f is 0 and the other is 2, c and d can form a ring;



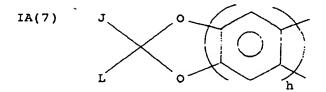
wherein

g is 0-6;

one of the E members is O, S, SO, SO<sub>2</sub>, ND<sub>11</sub>, -CO- or =CH-, the other E members being C atoms, provided that when one E is =C- there is only one double bond in the (E)<sub>4</sub> ring and when the E member is not =C-, there may or may not be one double bond in that ring;

D<sub>11</sub> is H or C<sub>1-3</sub> alkyl and

G is the same as an uncombined, discrete  $R_4$  member in formula IA or tetrahydropyranyl, OH, CF<sub>3</sub>, phenyl, benzyl or pyridyl or phenyl-, benzyl- or pyridylsubstituted with C<sub>1 4</sub> alkyl, alkoxy, alkylthio, CF<sub>3</sub>, NO<sub>2</sub> or halogen;

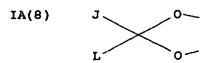


wherein

h = 0 or 1;

J and L are H,  $C_{1-8}$  alkyl or cycloalkyl, both of which may be substituted with  $C_{1-3}$  alkyl, alkoxy, hlogen; when B in formula IA is -CH-,

 $R_4$  is H, halogen, NO<sub>2</sub>,  $C_{1-3}$  alkyl, haloalkyl, alkoxy,  $C_{1-6}$  alkoxyalkyl or two  $R_4$  members together form the radical

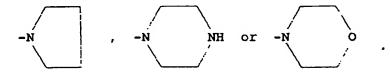


where J and L ar as d fin d in Formula IA(7); where in Formula IB, (-) (+)

 $R_5$  is  $C_{1-5}$  alkyoxy,  $NH_2$ ,  $-O-NHD_{12}D_{13}$ , or OM; wherein  $D_{12}$  and  $D_{13}$  are H or  $C_{1-4}$  alkyl, and M is an alkali metal or alkaline earth metal and where in Formula IC,

R<sub>8</sub> and R<sub>7</sub> are H or C<sub>1-4</sub> alkyl, and

X is OH, OD<sub>14</sub>, N(C<sub>1-3</sub> alkyl)<sub>2</sub>, N(CH<sub>2</sub>CH<sub>2</sub>OCH<sub>3</sub>)<sub>2</sub>, NHD<sub>15</sub> or one of the following radicals :



wherein

 $D_{14}$  is  $C_{1-8}$  alkyl or haloalkyl,  $C_{3-12}$  alkenyl or alkynyl,  $C_{2-12}$  alkoxyalkyl or haloalkoxyalkyl, phenyl, phenoxy, phenyl- $C_{1-8}$  alkyl, phenoxy- $C_{1-8}$ -alkyl, a salt-forming cation from ammonium, organic ammonium, alkali and alkaline earth metals, Mn, Cu, Fe, Zn, Co, Pb, Ag, Al or Ni; and

 $D_{15}$  is H, OH,  $C_{3-8}$  cycloalkyl,  $C_{1-12}$  alkyl, haloalkyl, hydroxyalkyl, cyanoalkyl, carbamoylalkyl,  $C_{3-12}$  alkenyl, haloalkenyl, haloalkynyl,  $C_{6-12}$  aryl or aryl- $C_{1-8}$  alkyl or alkoxy,

said compound of Formula I being used alone or in admixture with one or more additional herbicidal compounds as co-herbicide(s) with said compound of Formula I which comprises applying to the locus of the crop plant an antidotally-effective amount of

(i) a compound of the formula

$$R_{10} - C - N$$

$$R_{11}$$

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wherein  $R_{10}$  can be selected from the group consisting of haloalkyl; haloalkenyl; alkyl; alkenyl; cycloalkyl; cycloalkylalkyl; halogen; hydrogen; carboalkoxy; N-alkenylcarbamylalkyl; N-alkenylcarbamyl; N-alkyl-N-alkynylcarbamylalkyl; N-alkenylcarbamylalkoxyalkyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; N-alkyl-N-alkynylcarbamylalkoxyalkyl; alkylcarbamylalkoxyslkyl; alkylcarbamylalkoxyslkyl; alkenylaminoalkyl; alkenylaminoalkyl; alkenylaminoalkyl; alkylthioalkyl; haloalkylcarbonyloxyalkyl; cyanoalkyl; haloalkenylcarbonyloxyalkyl; hydroxyhaloalkyloxyalkyl; hydroxyalkyl; hydroxyalkyl; hydroxyalkyl; hydroxyalkyl; hydroxyalkyl; hydroxyalkyl; phenyl and substituted phenyl wherein said substituents can be selected from halogen, alkyl, haloalkyl, phenylalkenyl; substituted phenylalkenyl wherein said substituents can be selected from halogen, alkyl, alkoxy, carbamyl, nitro, carboxylic acids and their salts, haloalkylcarbamyl; phenylalkyl; phenylalkenyl; phenylalkenyl; substituted phenylalkenyl wherein said substituents can be selected from halogen, alkyl, alkoxy, halophenoxy, phenylalkoxy; phenylalkylcarboxyalkyl; phenylcycloalkyl; halophenylalkenoxy; halothiophenylalkyl; halophenoxyalkyl; bicycloalkyl; alkenylcarbamylpyridinyl; alkynylcarbamylpyridinyl; dialkenylcarbamylbicycloalkenyl; alkynylcarbamylpyridinyl; alkynylcarbamylp

R<sub>11</sub> and R<sub>12</sub> can be the same or different and can be selected from the group consisting of alkenyl; haloalkenyl; hydrogen; alkyl; haloalkyl; alkynyl; cyanoalkyl; hydroxyalkyl; hydroxyhaloalkyl; haloalkylcarboxyalkyi: alkylcarboxyalkyl; alkoxycarboxyalkyl; thioalkylcarboxyalkyl; alkoxycarboalkyl; alkylcarbamyloxyalkyl; amino; formyl; haloalkyl-N-alkylamido; haloalkylamido; haloalkylamidoalkyl; haloalkyl-N-alkylamidoalkyl; haloalkylamidoalkenyl; alkylimino; cycloalkyl; alkylcycloalkyl; alkoxyalkyl; alkylsulfonyloxyalkyl; mercaptoalkyl; alkylaminoalkyl; alkoxycarboalkenyl; haloalkylcarbonyl; alkylcarbonyl; alkenylcarbamyloxyalkyl; cycloalkylcarbamyloxyalkyl; alkoxycarbonyl; haloalkoxycarbonyl; halophenylcarbamyloxyalkyl; cycloalkenyl; phenyl; substituted phenyl wherein said substituents can be selected from alkyl, halogen, haloalkyl, alkoxy, haloalkylamido, phthalamido, hydroxy, alkylcarbamyloxy, alkenylcarbamyl xy, alkylamido, haloalkylamido or alkylcarboalkenyl; ph nylsulfonyl; substituted phenylalkyl wher in said substitu nts can be selected from halog n r alkyl; dioxyalkyl n, halophenoxyalkylamidoalkyl; alkylthiodiazolyl; piperidyl; piperidyl; dioxolanylalkyl, thiazolyl; alkylthiazolyl; benzothiaz lyl; halob nzothiazolyl; furyl; alkyl-substituted furyl; furylalkyl; pyridyl; alkylpyrialkyloxazolyl; tetrahydrofurylalkyl; thienyl: alkyl-substituted dyl: 3-cyano, thienvl: 4,5-polyalkyl ne-thienyl; α-haloalkylacetamidoph nylalkyl; α-haloalkylacetamidonitrophenylalkyl; αhaloalkylacetamidohalophenylalkyl; cyanoalkenyl;

 $R_{11}$  and  $R_{12}$  when taken together can form a structur—consisting of piperidinyl ; alkylpiperidinyl ; pyridyl ; di- or tetrahydropyridyl ; alkyltetrahydropyridyl ; morpholyl ; alkylmorpholyl ; azabicyclononyl ; diazacycloalkanyl, benzoalkylpyrrolidinyl ; oxazolidinyl ; perhydrooxazolidinyl ; alkyloxazolidiyl ; furyloxazolidinyl, thienyloxazolidinyl, pyrimidinyloxazolidinyl, benzooxazolidinyl,  $C_{3-7}$  spirocycloal-kyloxazolidinyl, alkylaminoalkenyl ; alkylideneimino ; pyrrolidinyl ; piperidonyl ; perhydroazepinyl ; perhydroazepinyl ; perhydroazocinyl ; pyrazolyl ; dihydropyrazolyl ; piperazinyl ; perhydro-1,4-diazepinyl ; quinolinyl, isoquinolinyl ; di-, tetra- and perhydroquinolyl- or -isoquinolyl ; indolyl and di- and perhydroindolyl and said combined  $R_{11}$  and  $R_{12}$  members substituted with those independent  $R_{11}$  and  $R_{12}$  radicals enumerated above ;

(ii) one of the following compounds

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α-[(Cyanomethoxy)imino]benzeneacetonitrile,

 $\alpha$ -[(1,3-Dioxopyran-2-yl-methoxy)-imino]-benzeneacetonitrile,

5-Thiazolecarboxylic acid, 2-chloro-4-trifluoromethyl, benzyl ester,

Benzenemethamine, N-[4-(dichloromethylene]-1,3-ditholan-2-ylidene]-α-methyl, hydrochloride,

Diphenylmethoxy acetic acid, methyl ester, 1,8-Naphthalic anhydride, 4,6-Dichloro-2-phenyl-pyrimidine, 2-Chloro-N-[1-(2,4,6-trimethylphenyl)-ethenyl]acetamide,

Ethylene glycol acetal of 1,1-dichloroacetone;

provided that when the Compound of Formula I is imazaquin, the antidotal compound is other than 1,8-na-phthalic anhydride, oxabetrinil, flurazole or N,N-diallyl dichloroacetamide and when the Compound of Formula I is imazethapyr, the antidotal compound is other than 1,8-naphthalic anhydride.

39. Method according to Claim 38 wherein said co-herbicide is an acetanilide of the formula

wherein

 $R_8$  is hydrogen,  $C_{1-8}$  alkyl, haloalkyl, alkoxy or alkoxyalkyl, alkenyl, haloalkenyl, alkynyl or haloalkynyl having up to 6 carbon atoms,  $C_{5-10}$  heterocyclyl or heterocyclylmethyl having O, S and/or N atoms and which may be substituted with halogen,  $C_{1-4}$  alkyl, carbonylalkyl or carbonylalkoxyalkyl, nitro, amino or cyano groups;

 $R_{\rm 9}$  is hydrogen, halogen, nitro, amino,  $C_{\rm 1-8}$  alkyl, alkoxy or alkoxyalkyl, and i is 0-5.

- 40. Method according to Claim 39 wherein said compound of Formula I is imazaquin, imazethapyr, imazapyr, AC-263222 or AC-222293.
- 41. Method according to Claim 40 wherein in said acetanilide compound of Formula IV,  $R_8$  is an alkoxyalkyl or pyrazolalkyl group having up to 6 carbon atoms or a  $C_{5-10}$  heterocyclic radical containing O, S and/or N atoms and  $R_9$  is a  $C_{1-6}$  alkyl or alkoxy radical.
- 42. Method according to Claim 41 wherein said compound is acetochlor, alachlor, butachlor, metolachlor or metazachlor.
  - 43. Method according to Claim 42 wherein said antidotal compound is one of the following compounds: α-[(Cyanometh xy)imin ]benzeneacetonitrile,

α-[(1,3-Diox pyran-2-yl-meth xy)lmino]b nzen acetonitril,

5-Thiazolecarboxylic acid, 2-chloro-4-trifluoromethyl, benzyl ester,

Benzenemethamine, N-[4-(dichloromethylene]-1,3-dithiolan-2-yliden ]- $\alpha$ -methyl, hydrochl ride, Diphenylm thoxy acetic acid, methyl ester, 1,8-Naphthalic anhydride,

4,6-Dichloro-2-phenyl-pyrimidine,

2-Chloro-N-[1-(2,4,6-trimethylphenyl)-ethenyl]acetamide,

Ethyl n glycol acetal of 1,1-dichloroacetone.

44. Method according to Claim 42 wherein said antidotal compound is one of the following compounds:

4-(Dichloroacetyl)3,4-dihydro-3-methyl-2H-1,4-benzoxazine,

Ethanone, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolinyl)-,

Cis/trans-piperazine, 1,4-bis(dichloroacetyl)-2,5-dimethyl-,

N-(Dichloroacetyl)-1,2,3,4-tetrahydroquinaldine,

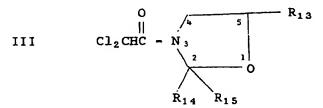
1,5-Diazacyclononane, 1,5-bis(dichloroacetyl,

1-Azaspiro[4,4]nonane, 1-dichloroacetyl).

45. Method according to Claim 42 wherein said antidotal compound is N,N-diallyi-dichloroacetamide, N-(2-propenyl)-N-(1,3-dioxolan-2-yl-methyl)dichloroacetamide or 1,3-oxazolidine dichloroacetamide of the formula

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wherein

 $R_{13}$  is hydrogen,  $C_{1-4}$  alkyl, alkylol, haloalkyl or alkoxy,  $C_{2-8}$  alkoxyalkyl, phenyl or a saturated or unsaturated heterocyclic radical having  $C_{5-10}$  ring atoms and containing O, S and/or N atoms, and  $R_{14}$  and  $R_{15}$  are independently hydrogen,  $C_{1-4}$  alkyl or haloalkyl, phenyl or a heterocyclic  $R_4$  member or together with the carbon atom to which they are attached may form a  $C_{3}$ - $C_{7}$  spirocycloalkyl group.

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46. Method according to Claim 45 wherein said antidotal compound is one of the following compounds:

Oxazolidine, 3-(dichloroacetyl)-2,2,5-trimethyl-,

Oxazolidine, 3-(dichloroacetyl)-2,2-spirocyclohexyl-,

Oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-phenyl-,

Oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-(2-furanyl)-,

Oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-(2-thienyl)-,

Pyridine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxazolidinyl]-.

47. Method according to any of Claims 38-45 or 46 wherein said crop plant is corn.

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- 48. Composition comprising imazaquin, imazethapyr, imazapyr, AC-263222 or AC-222293 and AD-67. and optionally containing alachlor, acetochlor or metolachlor.
- Composition comprising imazaquin, imazethapyr, imazapyr, AC-263222 or AC-222293 and oxazolidine,
   3-(dichloroacetyl)-2,2-dimethyl-(5-(2-furanyl)-.and optionally containing alachlor, acetochlor or metalochlor.

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